BUREAU OF HYGIENE AND TROPICAL DISEASES.

TROPICAL DISEASES BULLETIN.

Vol. 25.] 1928. [No. 6

KALA AZAR.

YOUNG (Charles W.). **Recent Research on the Leishmaniases outside of China.**—*China Med. Jl.* 1927. Nov. Vol. 41. No. 11. pp. 900–909. [44 refs.] [Union Med. College, Peking.]

During 1926 the author made a tour of various places where work on leishmaniasis was being carried out. His itinerary included Assam, Calcutta, Bagdad, Aleppo, Beirut, Jerusalem, Naples, Tunis, Hamburg and New York. He mentions the investigators and the researches they are conducting. In most cases the results have already been published, but one or two interesting points come to light. While in Beirut the author saw the first case of kala azar to be diagnosed microscopically in the Lebanons. It was in an infant 8 months old from near Tripoli, 50 miles north of Beirut. In connexion with the transmission of oriental sore and the possibility of *Phlebotomus papatasii* being the vector, it is stated that: "Nobody yet has transmitted leishmaniasis experimentally, so far as I am aware, with the exception of a single instance in a series of bed-bug experiments by Dr. Hertig and myself." Experiments with bed-bugs were described by these observers in 1926 (this *Bulletin*, Vol. 23, p. 580), but they were quite unsuccessful as regards transmission. The reviewer is not aware that the positive result has been previously mentioned.

C. M. Wenyon.

SHORTT (H. E.), DAS (Sribas) & LAL (Chiranji). **The Finding of Parasites in the Peripheral Blood of Kala-Azar Cases by Direct Microscopical Examination.**—*Indian Jl. Med. Res.* 1927. Oct. Vol. 15. No. 2. pp. 529–538. [18 refs.]

Though it is generally known that leishmania occur in the peripheral blood of cases of kala azar and can be discovered in blood films, the finding of parasites often requires a lengthy search, the number of successes obtained depending on the patience of the observer. The authors describe a method of making the blood films which renders search for the parasites a simpler matter.

"A small drop of blood is placed at one end of a slide; a second slide is applied to it, as in making an ordinary blood smear. The second slide, as soon as the blood has spread out along its edge, is pushed along the surface of the first with an even motion until the blood is almost exhausted. At this point, instead of continuing this motion, as in making an ordinary

smear, the second slide is abruptly lifted off, with the result that the blood smear ends in a straight edge stretching transversely across the slide. This straight edge is somewhat thicker than the rest of the smear and contains a large percentage of the total white cell content of the drop of blood. The white cells in the straight edge are all that it is necessary to examine for the purpose of determining, with a fair degree of accuracy, the presence and numbers of Leishman-Donovan bodies in the peripheral blood."

As a routine the terminal edges of 4 slides were examined for parasites. None of the thick film methods, including that advocated by KNOWLES and GUPTA (this *Bulletin*, Vol. 22, p. 195) approaches in simplicity and efficacy the method described here.

Of 455 cases of kala azar 358, or 78·7 per cent., showed parasites in the peripheral blood. These were contained in 2,168 cells which on an average gives 1·5 parasitized cells per slide. Of these cells 49·9 per cent. were polynuclears and 50·1 per cent. mononuclears of various types. The cells contained in all 3,210 parasites, giving the average number of parasites per slide as 2·3. The largest number of parasites seen in one slide was 183 and the largest number in a single cell 41. As the clinical condition of the patients at the time of blood examination varied it was possible to correlate to some extent the blood findings with the symptoms. As a general rule, if there is marked leucopenia the parasite rate is low and, conversely, when there is a high leucocyte count the parasite count will be high. A temperature above the normal has the effect of increasing the parasites in the peripheral blood. The existence of alimentary trouble—diarrhoea and dysentery—does not appear to increase the blood parasites. In general the stage of the disease does not affect the finding of parasites, except that very early cases are frequently negative. On the other hand, the disease does not as a rule develop uniformly, but by a series of periodic exacerbations. At such times parasites are more readily found, and it can often be noted that many of them are in process of division, an indication that active multiplication is taking place. When any form of antimony treatment is instituted there is rapid disappearance of parasites from the peripheral blood, a fact which is of great importance from the point of view of the campaign against the spread of the disease in Assam by the treatment method.

In addition to the proved cases of kala azar to which the above remarks refer, a number of other cases of splenomegaly were examined from the point of view of this disease. In the particular district of Assam there is a great prevalence of quartan malaria which often produces a great enlargement of the spleen. Furthermore, cases of enormous enlargement of the spleen were met with, chiefly in young adults of outwardly healthy appearance. There was always a history of many years' duration. Careful examination did not lead to the discovery of any parasite which could be considered as the cause of the condition.

C. M. W.

CHOPRA (R. N.), GUPTA (J. C.) & BASU (N. K.). **The Antimony Test in the Diagnosis of Kala-Azar.**—*Indian Med. Gaz.* 1927. Dec. Vol. 62. No. 12. pp. 688–691. [4 refs.]

In this paper the authors give further evidence of the value of the antimony serum test for kala azar. They point out that fallacies may result if special attention is not paid to the character of the precipitate

which forms at the junction of the serum and urea stibamine solution. In cases of kala azar it is definitely flocculent, is not easily broken up by shaking and does not disappear in 24 hours. In certain other diseases a non-flocculent precipitate may form. In case of doubt it is a good procedure to dilute the serum with 8 to 10 volumes of distilled water and to repeat the test. Compared with the aldehyde reaction the antimony test gives the better results.

C. M. W.

SEN (Atindra Nath). **Urea Stibamine Solution as a Test in Kala-Azar.**—*Indian Med. Gaz.* 1927. Dec. Vol. 62. No. 12. pp. 692–695.

The antimony test was applied to the sera of 42 patients, of whom 20 were suffering from kala azar. All the kala azar cases gave a positive result, as also did 1 case of ankylostomiasis and 3 cases of pulmonary tuberculosis.

C. M. W.

SANYAL (Charuchandra). **A Simpler Method of testing Kala-Azar Blood. (Simplified Urea-Stibamine Test.)**—*Med. Review of Reviews.* Calcutta. 1927. Dec. Vol. 2. No. 12. p. 529.

As a modification of the antimony test in kala azar the author suggests the following procedure. When the drug (urea-stibamine or amino-stiburia) in solution in distilled water is to be injected into a vein, before the actual injection is commenced, a drop of blood is aspirated into the syringe, after which the contents of the syringe, with the exception of 0·1 to 0·3 cc. are injected. The needle is withdrawn and about 2·3 cc. of distilled water is drawn into the syringe and mixed with the blood mixture which has remained in the syringe. In kala azar cases the mixture is distinctly opaque, but as the patient improves under treatment the opacity diminishes till finally in many cases, as a cure is obtained, the solution is transparent. The reaction is thus a guide to the progress of the case.

C. M. W.

FABRIS (Stanislao). Sull'azione dei preparati organici di antimonio sul siero di sangue nella leishmaniosi infantile. [**Action of Organic Antimony Preparations on the Blood Serum in Infantile Kala Azar.**]—*Pediatria.* 1928. Jan. 1. Vol. 36 No. 1. pp. 5–14. [15 refs.] [Inst. of Clin. Pediatrics, R. Univ., Naples.]

The author has applied the antimony test to 25 cases of infantile kala azar in Italy, employing as controls 65 healthy children and 245 others suffering from various diseases. His results are in agreement with those obtained by CHOPRA and his co-workers in India.

C. M. W.

SINTON (J. A.). **Kala-Azar at High Altitudes.** [Correspondence.]—*Indian Med. Gaz.* 1927. Dec. Vol. 62. No. 12. p. 723.

In connexion with the discovery of indigenous kala azar at Sanawar in the Simla Hills, it was noted that the only species of sandfly recorded from this locality was *Phlebotomus major* (*ante*, p. 60). The writer of the letter points out that in a collection of sandflies from this

locality he has found specimens of *P. argentipes*. Previous experience led to the view that this fly did not occur at altitudes above 2,000 feet whereas Sanawar village is above 4,000 feet.

C. M. W.

SHORTT (H. E.) & SWAMINATH (C. S.). **The Method of Feeding of *Phlebotomus argentipes* with Relation to its Bearing on the Transmission of Kala-Azar.**—*Indian Jl. Med. Res.* 1928. Jan. Vol. 15. No. 3. pp. 827–836. [3 refs.]

The feeding habits of the sandfly *Phlebotomus argentipes* have been studied by direct observation during the feeding act and by the examination of sections of the skin which have been fixed with the feeding sandfly *in situ*. It has been noted that, contrary to the generally accepted view, the sandfly during the feeding act, which occupies 2 to 5 minutes, ejects droplets of fluid from its hind gut. As *Leishmania donovani* develops only in the anterior part of the midgut and further forwards, any flagellates which might appear in these droplets would have been washed backwards from the midgut in the current of inflowing blood. Attempts to discover flagellates in the droplets have so far failed, but it has to be recognized that, especially in the case of sandflies which puncture the skin in several places, the puncture wounds might be contaminated with the ejected droplets. Examination of sections shows that the channel through which the blood flows in the proboscis is in its narrowest part wide enough for 3 blood corpuscles to lie abreast. In the case of sandflies heavily infected with flagellates it would appear impossible for blood to flow along the channel into the midgut till the plug of flagellates had been dislodged, and this could only take place in a forward direction. It would seem that in such cases a plug of flagellates would be injected into the wound. As regards the discovery of flagellates in the skin around the proboscis, no definite result has been obtained, though certain bodies resembling flagellates have been seen.

C. M. W.

GERSCHENOWITSCH (R. S.). Kombinierte Erkrankung an Hautleishmaniose, verbunden mit Kinderleishmaniose. [**Concurrent Infection with Kala Azar and Dermal Leishmaniasis.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1928. Jan. Vol. 32. No. 1. pp. 25–32.

Though in most parts of the world where leishmaniasis occurs there does not appear to be any overlapping of the endemic centres of kala azar and oriental sore, this is not the case in Central Asia where the two diseases occur side by side, not only in a district but even in one house and one family. In one case it was noted that a year before a young girl fell ill with kala azar the mother had been suffering from oriental sore, while in another a girl was found to have kala azar and a younger brother oriental sore. A still more interesting case was that of a woman who brought her 13-months-old infant for treatment. The woman was suffering from oriental sore and the infant from this disease and kala azar. A complete cure was obtained by intravenous injections of tartar emetic.

The author discusses the significance of the cases he describes and concludes that in Central Asia there is no complete antagonism as regards

the geographical distribution of cutaneous leishmaniasis and kala azar. Recovery from a cutaneous infection does not necessarily protect from a subsequent infection of the same type, nor from infection with the virus of kala azar. A concurrent infection with the two viruses does not influence the course of the disease produced by either.

C. M. W.

Artamonow (A. S.). Sur un cas de leishmaniose cutanée et viscérale chez un enfant d'onze mois. [**A Case of Dermal and Visceral Leishmaniasis in a Child of 11 Months.**]—*Russian Jl. Trop. Med.* 1927. Vol. 5. No. 9. French summary p. 603. [In Russian pp. 542–543.]

A child 11 months old in Bokhara had an oriental sore on the right cheek and was at the same time suffering from kala azar. Diagnosis was made by discovery of *Leishmania tropica* in scrapings from the sore and *L. donovani* in spleen puncture material.

C. M. W.

Struthers (Ernest B.). **The Treatment of Kala Azar by Stibosan (Heyden 471) and Antimosan (Heyden 661).**—*China Med. Jl.* 1927. Sept. Vol. 41. No. 9. pp. 755–760.

Of the 2 drugs mentioned, stibosan appears to be the better. A series of 7 cases of kala azar treated with it resulted in 6 cures and one death. The average duration of treatment in the 6 cured cases was 6 weeks. Injections were given 3 times a week, a commencing dose of 0·05 gm. being gradually increased to a maximum of 0·2 gm., which was continued so long as reactions or other unfavourable symptoms did not appear. It is concluded that stibosan, which is much less toxic than the antimony tartrates, is a valuable addition to the organic preparations of antimony for the treatment of kala azar.

Antimosan was not so effective, but in view of its very low toxicity it may be used with very debilitated patients and especially in conjunction with some other drug. One patient, a boy of 7, responded remarkably to antimosan, though on admission the condition was very serious, there being cancrum oris of the right cheek, with inability to talk or feed, and only partial consciousness. There did not appear to be any prospect that the boy would live more than 2 or 3 days. Antimosan in full doses, 1 cc. (5 per cent. solution), 1·5 cc. and 2 cc. were injected on 3 successive days. By the fifth day there was marked improvement and a few days later the boy was running about the ward. On the fortieth day after admission he was discharged as probably cured.

C. M. W.

Chopra (R. N.) & Gupta (C. R. Das). **Provocative Action of Organic Compounds of Antimony in Leishmaniasis.**—*Indian Jl. Med. Res.* 1928. Jan. Vol. 15. No. 3. pp. 565–570. [2 refs.]

It has been shown in animals that administration of antimony compounds produces a marked increase in volume of the liver and spleen, as also an augmentation of the rhythmic movements of these organs [*ante*, p. 412]. The feeling of fullness and discomfort complained of by many patients after treatment with antimony derivatives is probably due to this action of the drug. The increased rhythmic movements

and the engorgement produce rupture of the endothelial cells with consequent liberation of leishmania which appear in the blood. Injections of antimony compounds have therefore a provocative action in those cases of kala azar in which fibrotic changes in the liver and spleen are not too advanced, in that they may cause parasites to appear in the peripheral blood.

C. M. W.

YOUNG (Charles W.) & HERTIG (Marshall). **Peripheral Lesions produced by *L. donovani* and Allied Leishmaniae.**—*Proc. Soc. Experim. Biol. & Med.* 1927. Dec. Vol. 25. No. 3. pp. 196–197. [6 refs.] [Peking Union Med. College, Peking.]

Working with certain strains of leishmania the authors have found that the initial visceral infection produced by them in the Chinese striped hamster (*Cricetulus griseus*) is followed by the appearance of peripheral lesions. Five culture strains were obtained from Tunis, where they had been kept by repeated subculture for varying periods up to 15 years. The strains comprised 2 of *Leishmania donovani* (Mediterranean type), 2 of the Mediterranean canine type, and 1 of *L. tarentolae*, obtained originally by culture from the blood of the gecko. [The statement is made that all of these originally produced visceral lesions only, but whether this refers to their own observations or those of others the authors do not make clear. The reviewer is not aware that any observer has hitherto recorded the production of visceral lesions in animals by the inoculation of *L. tarentolae*.] However, the authors now state that with all the 5 strains intraperitoneal inoculation of hamsters produces at first a visceral infection, with enlargement of the liver and spleen and with leishmania fairly abundant in the smears of the spleen, liver, bone marrow and heart blood. After a lapse of from 2 months to over a year from the time of inoculation, bilaterally symmetrical lesions began to appear in the following order: (1) swelling of the carpi and tarsi, extending later to the feet, including the digits ; (2) swelling of the posterior half of the scrotum in males, with subsequent ulceration (infiltration and enlargement of the clitoris, exceptionally with ulceration of the perineum, in the female) ; (3) swelling (infiltration) and later ulceration of the base of the tail ; (4) similar swelling of the nose, rarely with ulceration ; and (5) swelling and ulceration of the margins of the ears. From the swollen tissues leishmania enclosed in clasmatocytes were obtained, often in large numbers. In the lesions of the feet the clasmatocytes were present often in enormous numbers between the fibres of the ligaments from the carpi and tarsi and distally. In the lesions showing ulceration the clasmatocytes were in the deep layers of the skin and subcutaneous tissues. Intraperitoneal inoculation of the tissues from these peripheral lesions produced the same picture in 2 to 4 months and have continued to do so consistently and repeatedly. The same pathological changes were obtained with all the 5 strains. As the peripheral lesions developed the infection of the internal viscera subsided so that at autopsy some of the animals had spleens and livers which were normal in size and negative to leishmania, both by direct microscopical observation and inoculation of hamsters.

Similar lesions of a single extremity were found in hamsters inoculated with two Chinese strains of *L. donovani*. These animals, which had a heavy visceral infection, had had the four extremities constricted

by tying for feeding experiments with insects several months before the appearance of the peripheral lesions. Inoculation of hamsters from these peripheral lesions produced only a general visceral infection like that caused by the strains with which the animals had been originally infected. Two strains of *L. donovani* isolated by ACTON and KNOWLES in Calcutta from skin lesions ("xanthoma" strain, and "dermal leishmanoid" strain) produced only visceral infections. From these observations it would appear that the 4 Mediterranean strains of *L. donovani* (2 infantile and 2 canine) behaved alike in leading to visceral infections followed by peripheral lesions in hamsters, while 2 Indian strains and 2 Chinese strains (apart from the lesions which were possibly the result of trauma) produced only visceral lesions. The fact that the naturally occurring gecko parasites (*L. tarentolae*) should behave like the other Mediterranean strains is remarkable, as all evidence at present available has tended to indicate that it had no relationship with the human parasites. All the Mediterranean strains, however, resembled one another in their long maintenance in the culture tube, while the Indian and Chinese strains had been more recently isolated. It would be of considerable interest to compare the behaviour in hamsters of recently isolated strains of all the types.

C. M. W.

ZOZAYA (Carlos). Das Blutbild bei der experimentellen Hamster-Leishmaniosis. [**The Blood Picture in Experimental Leishmaniasis of the Hamster.**]—*Abhandl. a. d. Gebiet d. Auslandskunde. Hamburg. Univ.* 1927. Vol. 26. (D., Med. & Vet. Vol. 2.) [Festschrift NOCHT.] pp. 628–630. [2 refs.] [Inst. for Ship & Trop. Diseases, Hamburg.]

During the course of a *Leishmania donovani* infection in the European hamster (*Cricetulus frumentarius*) examinations of the leucocytes of the blood were made. It was noted that there was a leucopenia while the percentage of the lymphocytes was increased at the expense of the polynuclears. The mononuclears decreased in number while the plasma cells increased from 1 to 4 per cent.

C. M. W.

NAPIER (L. Everard). **The Infectivity of the Flagellate Form of** *Leishmania donovani*.—*Indian Jl. Med. Res.* 1927. Oct. Vol. 15. No. 2. pp. 481–483. [2 refs.]

With a view to arriving at some conclusion as to the influence of age of cultures of *Leishmania donovani* on their infectivity to mice, a series of 66 animals was inoculated intraperitoneally, each receiving all the flagellates it was possible to remove from a single tube of N.N.N. medium. The mice were kept for periods of 3 to 4 months, when they were killed and examined by the smear and culture methods. Of the 66 mice, 44 were examined in this way, and 15 were found infected. Of 14 mice inoculated with cultures less than 6 days old, 3 were infected: of 18 inoculated with cultures less than 12 and more than 6 days old, 7 were infected: of 12 inoculated with cultures more than 12 days old, 5 were infected. It is evident that the early flagellate forms are capable of producing infection, though less readily than the older cultures in which, however, the flagellates were much more numerous. If allowance be made for the richness of the older cultures, it would appear

that the younger cultures are actually more infective. The cultures used were all primary cultures commenced by inoculating the tubes with spleen puncture material.

C. M. W.

GRAHAM (J. D.). Les recherches sur le kala-azar dans l'Inde Britannique pendant l'année 1926. [**Researches on Kala Azar in British India, 1926.**]—*Bull. Office Internat. d' Hyg. Publique*. 1927. Oct. Vol. 19. No. 10. pp. 1439–1452. [1 ref.]

The report gives a general summary of the investigations of the Kala Azar Commission working in Assam and of those of the School of Tropical Medicine at Calcutta. These have already been noted in the reviews.

ARAUJO (H. C. de Souza). Sur le kala-azar aux Indes et le bouton d'Orient à Bagdad. [**Kala Azar in India and Oriental Sore in Bagdad.**]—*C.R. Soc. Biol.* 1928. Mar. 2. Vol. 98. No. 8. pp. 637–639. [Oswaldo Cruz Inst., Rio de Janeiro, Brazil.]

In Calcutta the author was shown the work which was being carried out on kala azar. He relates his experiences but does not give any new information regarding this disease.

FERNÁNDEZ MARTÍNEZ (Fidel). Sobre distribución geografica del kala-azar en España. [**Geographical Distribution of Kala Azar in Spain.**]—*Siglo Méd.* 1927. Oct. 1. Year 74. Vol. 80. No. 3851. pp. 322–324.

Cases of kala azar have been noted in all the provinces of the Mediterranean littoral including Cadiz. The disease is, however, more common in the provinces north of Alicante. Another important endemic area comprises Madrid, Cáceres, Toledo and a small part of Badajoz, while a small focus occurs in Córdoba.

SAENZ DE SANTA MARÍA Y MARRÓN (R.). Contribución al estudio de la leishmaniosis infantil. [**Case of Infantile Kala Azar.**]—*Siglo Méd.* 1927. May 14. Year 74. Vol. 79. No. 3831. pp. 542–544. With 1 text fig.

Description of a case of kala azar in a boy 4 years of age in Rioja in the province of Logroño in Spain. The case indicates that the disease extends further north than has hitherto been supposed.

MATARANGAS (G.). Le kala-azar en Grèce. [**Kala Azar in Greece.**]—*Bull. Office Internat. d' Hyg. Publique*. 1927. Oct. Vol. 19. No. 10. pp. 1453–1454.

A short note on the distribution of kala azar in Greece. No new information is given.

C. M. W.

CHATTERJEE (Khagendra Nath). **An Instance of Toxicity of Urea-Stibamine.**—*Med. Rev. of Reviews*. 1927. Oct. Vol. 2. No. 10. pp. 463–464.

During the treatment of a case of kala azar with urea stibamine there developed alarming symptoms of multiple neuritis, with consequent loss of power of movement in the limbs, tongue and palate, and the appearance

of other serious symptoms. The injections were discontinued, the patient not commencing to improve for about a month. Ultimately there was complete recovery.

C. M. W.

METELKIN (A. I.). Zur Frage der diagnostischen Bedeutung von Keratitis und Konjunktivitis bei der Leishmaniosis der Hunde. [**The Question of the Diagnostic Importance of Keratitis and Conjunctivitis in Canine Kala Azar.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1928. Jan. Vol. 32. No. 1. pp. 41–43. [5 refs.]

Several authors have drawn attention to the occurrence of keratitis and conjunctivitis in dogs suffering from visceral leishmaniasis and have even considered the keratitis to be of diagnostic importance in areas where canine kala azar occurs. The author, who has had considerable experience in Turkestan, has come to the conclusion that keratitis is of very common occurrence and is due to many causes, only one of which is leishmaniasis, so that this sign in itself cannot be regarded as of diagnostic importance.

C. M. W.

PARROT (L.), DONATIEN (A.) & LESTOQUARD (F.). Notes expérimentales sur le bouton d'Orient et sur la leishmaniose canine viscérale. [**Experiments with Oriental Sore and Canine Kala Azar.**]—*Arch. Inst. Pasteur d'Algérie.* 1927. June. Vol. 5. No. 2. pp. 120–130. With 9 figs. on 4 plates. [Pasteur Inst., Algiers.]

As first demonstrated by LAVERAN, the inoculation of *Leishmania tropica* into the testis of the mouse gives rise to a tumour which contains large numbers of parasites. With material from tumours of this kind attempts were made to vaccinate monkeys against *Leishmania tropica* and the canine strain of *Leishmania donovani*. By inoculation into the skin of virus from the mouse oriental sore was produced in 11 monkeys. The incubation period varied from 7 to 17 days, and healing took place in from 53 days to 5 months. There first appeared a papule which quickly became a definite intradermic nodule. With increase in size scaling of the surface occurred. Finally there was ulceration covered by an adherent scab. In one case secondary sores developed along the course of the lymphatics. Two monkeys were inoculated subcutaneously with virus from the mouse, killed by heating to 56° C. for half an hour, and 2 intracutaneously with a similarly killed virus. The 4 monkeys were later inoculated with living virus and developed typical lesions. Two other monkeys were inoculated subcutaneously with living virus. Later intracutaneous inoculation of living virus produced definite lesions. The attempts at vaccination had thus failed. Five monkeys which had recovered from oriental sore were re-inoculated intracutaneously with living virus. Two which had recovered from the first infection one month before did not react to the second inoculation. Two which had recovered 4 months and less than one month before developed abortive lesions, while one which had recovered 2 months before showed no immunity whatever.

A monkey inoculated intracutaneously in 2 places with *Leishmania donovani* from the spleen of a heavily infected dog developed nodules but only scanty leishmania were found in them. Complete recovery occurred in a little over 4 months. Re-inoculation with *Leishmania*

tropica produced infection. A monkey which had recovered from oriental sore 45 days before was inoculated intracutaneously with *Leishmania donovani* from the bone marrow of a dog. Infection with nodular formation occurred. Leishmania were numerous in the lesions. Recovery took place in less than 3 months.

C. M. W.

Adler (S.) & Theodor (O.). **The Exit of *Leishmania tropica* through the Proboscis of *Phlebotomus papatasii*.** [Correspondence.]—*Nature.* 1928. Feb. 25. Vol. 121. No. 3043. p. 282. [Microbiol. Inst., Hebrew Univ., Jerusalem.]

Three female sandflies (*Phlebotomus papatasii*) were allowed to feed through a rabbit skin membrane on a culture of *Leishmania tropica.* Four days later they were fed on a human being and after the expiry of a further 4 days they were allowed to feed through a rabbit skin membrane on inactivated rabbit serum.

Nine cover glass preparations from the serum were examined after the feed for flagellates which might have been inoculated into it during the feed, but none was found. Some of the serum was sown in a tube of Shortt's N.N.N. medium and in it flagellates were found on the sixth day. This observation proves conclusively that the flagellate forms of leishmania may pass from the proboscis of an infected sandfly into the food medium during the feeding act.

C. M. W.

Aragonés (Fullat). El botón de Oriente en el priorato y campo de Tarragona. [**Oriental Sore in the Tarragona District.**]—*Rev. Méd. de Barcelona.* 1927. Vol. 8. No. 47. pp. 487–489. With 3 text figs.

A skin disease known as Llunari occurs in the province of Tarragona on the east coast of Spain. Four cases in children from Arboli and Alforja are noted by the author who, by the discovery of *Leishmania tropica* in one, has demonstrated the condition to be oriental sore. Kala azar does not appear to occur in this locality.

C. M. W.

Bhattacharyya (Amulya Kumar). **A Case of Probable Dermal Leishmaniasis.**—*Indian Med. Gaz.* 1928. Jan. Vol. 63. No. 1. p. 17.

A skin eruption on the upper and lower extremities and scalp of an Indian 35 years of age resembled dermatitis exfoliata and responded to treatment with urea stibamine. This response leads the author to think the case to be probably one of dermal leishmanisis.

C. M. W.

Ovejero Paz (A.) & Novillo Pizarro (R.). Leishmaniosis. Su tratamiento por el ácido láctico. [**Treatment of Dermal Leishmaniasis with Lactic Acid.**]—*Bol. Inst. Clin. Quirúrg.* Buenos Aires. 1926. Vol. 2. No. 14, 15 & 16. pp. 348–354. With 4 figs.

The paper describes the successful treatment of 3 cases of mucocutaneous leishmaniasis by curettage and the application of lactic acid solution (see this *Bulletin*, Vol. 23, p. 585). It is stated that Dr. Zapico treated similarly 115 cases in Embarcación with very good results.

C. M. W.

Péterfi (T.) & Moschkowski (Sch.). Mikrurgische Versuche an Leishmanien. [**Microscopic Experiments on Leishmania.**—*Arch. f. Protistenk.* 1928. Feb. 14. Vol. 60. No. 3. pp. 492–500. With 4 text figs. [7 refs.]

The experiments described show that the flagellum of the flagellate forms of *Leishmania tropica* is not merely an organ of locomotion but also a primitive sense organ. If with a micro-dissection needle the flagellum is fixed on the slide at any point, even at its extreme end, a profound change immediately occurs. The flagellum itself becomes rigid. This is followed by a swelling and rounding up of the body in 3 to 5 minutes, associated with the development of a vacuole near the kinetoplast, and the appearance of granules in the cytoplasm, changes which undoubtedly lead to the death of the organism.

C. M. W.

Roskin (Gr.) & Romanowa (K.). Die Kernteilung bei *Leischmania tropica*. [**Nuclear Division in** *Leishmania tropica*.]—*Arch. f. Protistenk.* 1928. Feb. 14. Vol. 60. No. 3. pp. 482–491. With 4 text figs. & 19 coloured figs. on 1 double plate. [3 refs.] [Microb. Inst., Education Commissariat, Moscow.]

It is claimed that by the use of Feulgen's stain it can be demonstrated that during nuclear division of the cultural forms of *Leishmania tropica* 3 chromosomes are formed, and that each of these divides, 3 daughter chromosomes passing to each daughter nucleus.

C. M. W.

Pawlowsky (E. N.). Zur Geschichte der Entdeckung der Parasiten der Haut-Leischmaniose. [**The History of the Discovery of the Parasite of Oriental Sore.**]—*Pensée Méd. d' Usbékistane.* Tashkent. 1927. Nov. Vol. 2. No. 2. German summary p. 130. [In Russian pp. 16–19.]

In a historical review the author points out that in Tashkent in 1899 Professor Borowsky discovered, described, figured and provisionally classified with the protozoa the parasite of cutaneous leishmaniasis.

C. M. W.

Muir (E.). The Effect of Kala-Azar on Leprosy.—*Indian Jl. Med. Res.* 1927. Oct. Vol. 15. No. 2. pp. 497–499. [2 refs.]

Napier (L. Everard). The Pentavalent Compounds of Antimony in the Treatment of Kala-Azar. I. Stibosan (Von Heyden 471); an Analysis of the Results of the Treatment of the First 104 Cases.—*China Med. Jl.* 1927. Sept. Vol. 41. No. 9. pp. 761–764.

BERIBERI.

THIERFELDER-THILLOT (M.). Hypovitaminose als Grundlage für das "maligne Syndrom" (akute maligne Beriberi). [**Hypovitaminosis as Basis for Acute Beriberi.**]—*Abhandl. a. d. Gebiet d. Auslandskunde. Hamburg. Univ.* 1927. Vol. 26. (D., Med. & Vet. Vol. 2.) [Festschrift NOCHT.] pp. 556–560. [1 ref.]

The rôle played by vitamin deficiency in the production of the symptom complex of acute malignant beriberi is here discussed. The author instances the following :—

Observation 1. A boy, aged 12 years, had lived on a diet rich in all vitamins until taken as servant to a Malay family. Here the diet mainly consisted of rice, and this poor in quantity and quality. This diet was apparently sufficient for the other servants, who were accustomed to it, but after a time the boy in question developed symptoms of acute beriberi, and in spite of attempts to increase his diet, he died in a very short time.

Observation 2. Deals with a crew of four men, one a Japanese and three Malays, who were kept at sea under very bad weather conditions on a diet of rice, dried fish and preserves. The voyage lasted three months, and about a fortnight before landing the Japanese died after a short illness. On arrival two of the remaining members of the crew were admitted to hospital, where they died within twenty-four hours. Both presented symptoms of acute beriberi and at the autopsy on one of them the heart muscle was found to be normal.

Observation 3. Of thirty Papuans living under exactly the same conditions three became suddenly ill with dyspnoea and burning in the stomach. On examination cyanosis and enlargement of the liver were found. The temperature was normal. All three cases died after an illness of a few hours' duration and at autopsy enlargement of the liver and stasis in all organs were the sole findings. The remaining Papuans were then admitted to hospital and fed with a diet rich in vitamins with the result that no further cases occurred. The diagnosis was acute beriberi and not acute infectious disease.

Conclusions. The author remarks upon the similarity between this syndrome and that due to acute suprarenal insufficiency, as described by SERGENT and BERNARD. These investigators grouped acute suprarenal insufficiencies into three categories, viz. subacute, acute and hyper-acute. The patients recorded in the above three observations will be seen to fall into these groups in the order given.

The reason why cases showing this syndrome are so acute is that the vitamin deficiency followed suddenly upon a prolonged period of living on a normally balanced diet. On the other hand, the more chronic forms of beriberi seem to occur amongst those who are constantly living on the brink of vitamin deficiency.

A. D. Bigland.

LEGER (Marcel). Le béribéri n'est pas une maladie d'origine alimentaire. [**Beriberi not a Disease of Dietetic Origin.**]—*Rev. Prat. Malad. des Pays Chauds.* 1927. Oct. Year 6. Vol. 7. No. 10. pp. 528–539.

The association between beriberi and rice is considered in the form of a review. The subject naturally lends itself to chronological treatment.

Though dried fish, or insufficient fat or nitrogen in the diet were held responsible by some workers, for a long time it had been recognized that endemic beriberi occurred among those races whose basal diet was rice. In 1897 EIJKMAN showed that in the prisons of Java the beriberi death rate was 284 per 10,000 in those institutions where polished rice was used and only 1 per 10,000 in those using "red rice." These findings were confirmed by experiments on fowls.

The work of THÉZÉ, GOUZIEN, FARGIER and HIGHET gave further evidence that in various outbreaks of beriberi, for the prevention of which they were responsible, the substitution of incompletely decorticated rice for the polished variety was the deciding factor.

Such observations led to the unanimous view of the second International Congress of Medicine in the Far East (1911) that beriberi is associated with the constant taking of polished rice as the principal substance in the diet.

Further work culminating in the researches of FRASER and STANTON (1911) showed a connexion between decortication of rice and loss of phosphorus content but, more important still, that rice in the process of polishing loses a protecting substance. It remained for FUNK to show that this substance is a vitamin and to make clear the difference between starvation and avitaminosis.

Since then, from time to time, work has been described which has thrown doubt upon the connexion between vitamin B deprivation and beriberi. The following may be quoted briefly :—

1. OGATA and others have shown that while the tissues and organs of polyneuritic birds have a markedly lowered vitamin B content this is not true of human beriberi cases.

2. MACCARRISON (1924) found that a sample of rice incapable of producing beriberi in man did so in the pigeon, and also that rice obtained from an area where beriberi was very active did not cause the disease in pigeons and on analysis was found to contain a large quantity of vitamin B.

3. MARCHOUX described an outbreak of beriberi in France among Asiatic troups which received a diet richer in vitamins than did their European colleagues in the same neighbourhood. But the Asiatics consumed polished rice instead of bread and the epidemic disappeared with the suppression of the rice.

4. A similar epidemic in France was described by NORMET.

These and other considerations (e.g., institutions which received rice from the same source having beriberi in some and not in others, etc.) lend some support to the toxi-infectious theory. Examples are quoted suggesting that the disease can be spread by direct contact, but the work of Noel BERNARD and his colleagues upon the connexion between beriberi and the "B. Asthenogenes" is in the author's opinion of the greatest importance.

The two views upon beriberi etiology can be united. The polishings of rice play a protective rôle in maintaining digestion and in counteracting by the contained phosphates, fat, magnesium and vitamins the bad effect of excessive carbohydrate. Polished rice is more easily contaminated by organisms than the natural variety. In short, rice itself is no more a cause of beriberi than the marsh is of malaria.

A. D. B.

CHAPMAN (Leland S.). **Infantile Beri-Beri in Panama. A Preliminary Report.**—*Proc. Med. Assoc. Isthmian Canal Zone.* 1921–1926. Vol. 14. pp. 37–48.

Infantile beriberi was first described by HIROTA in Japan in 1888. The infant mortality in the Philippines was very great at this time and in 1904 HIROTA'S diagnosis was adopted for many of the cases in those islands. That this was correct is suggested by ALBERT who in 1908 reported on the first case with full clinical and pathological details. Beginning in 1915 the diagnosis was made with increasing frequency in the hospital (Panama Zone) where the following observations were made: The findings are collected from 19 cases which showed the lesions of the disease at autopsy. The clinical and post-mortem appearances closely resemble those noted in the Philippine Islands and Japan except in one respect, viz. the etiology. Whereas in other localities the mothers nursing the children were themselves suffering from beriberi, in the cases here described eight were not breast fed, four only intermittently and in six there was no history.

Details of findings in 19 *cases.*—All children in this group were born in the Republic of Panama or on the Canal Zone and the parents were British West Indians, with one exception. Thirteen were boys and seven girls [*sic*]. Deaths occurred from the second month up to the end of the first year. The youngest admission to hospital was a baby only 49 days old. No seasonal incidence was noted. The onset of the disease was nearly always insidious and often the first thing noted by the mother was a heart attack. Six cases died suddenly before admission, while of the remaining thirteen eight died within twelve hours of admission, one lived for 27 hours and only four lived for some days. Symptoms such as vomiting, anorexia, diarrhoea, swellings, etc., had been noted in some cases.

The children, with only one exception, were well nourished. In eleven cases oedema was recorded, in five cyanosis and in five anaemia. The average pulse rate was 140 and there was no cardiac enlargement Dyspnoea was common (40–60). Pleural effusions were not found clinically. Six cases had abdominal distention and in thirteen no mention of the abdomen was made. Ten showed liver enlargement. As regards the nervous system few data were available. The knee jerks were absent in three, sluggish in three and normal or active in four. Kidney function was only disturbed in two cases and though albumen was found in the urine of six after death it was not present in two of these before death. In all those examined an anaemia was found and the blood Wassermann reaction proved negative in all the thirteen cases tested.

The autopsy findings are particularly in agreement with those described in the Philippines and Japan, viz., " an apparently well nourished child, the skin pale, the body swollen, with local or generalized oedema which pits on pressure, and on section an hypertrophied and dilated right heart, its musculature coarse, stiff and firm ; the wall of the right heart equalling or exceeding in thickness that of the left heart ; congestion of the viscera and absence of other findings sufficient to account for death." To these findings may be added moderate pleural effusions in nearly all cases, also a fatty infiltration of the liver.

One case is described in the fullest detail both clinical and post-mortem.

A. D. B.

KATSURADA (Fujiro). Ueber die " Beriberi " auf japanischen Schiffen. [**Beriberi on Japanese Ships.**]—*Abhandl. a. d. Gebiet d. Auslandskunde. Hamburg. Univ.* 1927. Vol. 26. (D., Med. & Vet. Vol. 2.) [Festschrift NOCHT.] pp. 223–224. [1 ref.] [Inst. for Ship & Trop. Diseases, Kobe, Japan.]

Twenty years ago beriberi being very prevalent in Japanese ships sailing from Kobe, it was decided that an alteration in the diet was indicated. This took the form of mixing rye with the rice in the proportion of 3 to 7. Following this readjustment the incidence of the disease fell considerably. Thus in the years 1915–1924 the percentage of beriberi in all hospital admissions was 9·4 and in the last two years—1925 and 1926—this figure has fallen to 7·3.

The author remarks upon the occurrence of beriberi following infectious diseases. In this respect malaria seems to play an important rôle. An instance is quoted of a Japanese ship on the return journey from South America, in which the crew developed malaria. This was immediately followed by an outbreak of beriberi which, in some instances, assumed an acute and fatal form. The argument is continued by quoting eleven sporadic cases of beriberi out of a total of 58 which immediately followed an attack of malaria.

A. D. B.

GRAHAM (J. D.). La production expérimentale du béribéri. [**Experimental Production of Beriberi.**]—*Bull. Office Internat. d' Hyg. Publique.* 1927. Oct. Vol. 19. No. 10. pp. 1477–1480. With 1 diagram.

This communication takes the form of a note presented before the Comité de l'Office International d'Hygiène Publique 1927, by Lt.-Col. J. D. Graham, I.M.S., and deals with the researches carried out in MACCARRISON'S Laboratory.

Polyneuritis columbarum and true beriberi in pigeons are two distinct conditions. In the former, in addition to polyneuritis, the heart is atrophied, whereas in the latter cardiac hypertrophy and degeneration are present. This cardiac condition is the essential feature of true beriberi.

Experiments on upwards of 2,000 animals have demonstrated that beriberi is not caused by the absence of vitamin B in the food but by the combined action of insufficiency of this factor and a toxin. This toxin is not produced in rice by microbial agency but seems to be of metabolic origin.

A diet of decorticated rice does not give rise to true beriberi in pigeons. But add to this diet dhal arhar (0·8 grammes a day for each bird), then in 25 per cent. of the birds the true disease will develop. (Dhal arhar is a yellow pea which is reduced to powder and taken by the natives as a pap or pulp. This vegetable is habitually consumed by rice eating peoples). Similarly true beriberi is produced by feeding with rice, the grains of which have been in an autoclave at 130° C. for two hours in an alkaline medium, thus reducing its vitamin B content to the requisite point. If it be supposed that the figure 100 represents the amount of vitamin B necessary to keep pigeons in health on any given diet then true beriberi will occur at figures varying between 75 and 90. Reducing the vitamin content still lower, to the figure 50 or below, will cause polyneuritis columbarum. It is possible to cause the

disease (true beriberi) either by adding a quantity of dhal to the decorticated rice diet, thereby *increasing* the vitamin B content to 75–90 or by autoclaving a rich vitamin food, thus *reducing* the vitamin value to the figure 75–90. (These results are shown in a graph.)

Further, lightly milled or half-boiled rice contains a vitamin figure of 75–90 and thus can cause true beriberi in pigeons but when dhal (0·2 gm. per bird per day) is added, so that the content is increased to 100 or more, the animals are completely protected; thus proving that rice itself does not contain the poison. By this expedient the propagation of beriberi in a Burmese prison was stopped.

In India true beriberi occurs during the monsoon period amongst those who take 1½–2 lb. of decorticated rice and 1–2 oz. of dhal. Cold and wet weather affects the suprarenals and also reduces the value of the rice in vitamin and P_2O_5 content. This is not true of white flour, which contains much more vitamin B than does decorticated rice and therefore the West is almost immune against beriberi.

In short, true beriberi is not due to a complete absence of vitamin B, but to an insufficiency of this factor. This degree of insufficiency occasions the production within the organism of a poison which exercises a specific action on the heart and is the essential cause of the disease. Other diseases resembling beriberi but of different etiology ought not to be placed in the same category.

A. D. B.

LUTHER (S.). **Rational Treatment of Beri-Beri.**—*Malayan Med. Jl.* 1927. June. Vol. 2. No. 2. pp. 61–62.

The method recommended and used in a small number of cases of dry beriberi was that of immersing the patients' legs in a bucket of heated rice-washings and bathing them continually from the knee downwards with the fluid. It is stated that marked improvement is noticed in a week and in three to four weeks paralytics can generally walk. Backward infants in Southern India are frequently treated in a similar way. The beneficial effect is attributed to the vitamin B contained in the rice washings being absorbed through the skin.

P. W. Bassett-Smith.

GUPTA (Nalini Ranjan Sen). **The Present Epidemic of Dropsy.**—*Med. Rev. of Reviews.* Calcutta. 1926. Oct. Vol. 1. No. 10. pp. 436–446.

The author writes that the epidemic of dropsy under review is the 4th or 5th in Calcutta, and that many cases of cardiac or eye trouble date back to a similar epidemic. He refers to the large infection roll, the tragic suddenness of the fatal result, and the protean manifestations of the disease. It differs from beriberi of the text-books in that there are no signs of peripheral neuritis in the extremities and the knee jerks can always be obtained except when oedema forms a mechanical obstruction to their elicitation. Discussing the etiology he says there have been many cases among the well-to-do, and that most of the worst cases have occurred in damp one-storied houses and expresses the opinion that the disease is due to some infection which gains entry by the gastro-intestinal route. The symptoms are, oedema, gastro-intestinal symptoms—usually diarrhoea, cardiac dilatation and tendency to syncope, tendency to haemorrhages, enlarged liver, congested or

oedematous lungs, tendency to glaucoma, fever. The heart symptoms vary from slight dilatation to acute cardiac failure. The objective signs are a diffuse wavy impulse, often outside the normal position, and frequently nothing else. The haemorrhages occur from almost every orifice and distinguish this disease from ordinary beriberi. The gastro-intestinal symptoms often vary inversely with the cardiac, diarrhoea bringing relief and constipation cardiac embarrassment. With rest and proper treatment fatalities are rare. The great majority of deaths have occurred in persons suffering from an apparently mild form. [No figures are given in Dr. Gupta's paper and nothing is said about the food consumed.]

A. G. B.

i. Banerjee (Saurindra Mohan). **Epidemic Dropsy.**—*Indian Med. Rec.* 1926. Dec. Vol. 46. No. 12. pp. 367–370.

ii. Brahmachari (N.) & Thakur (Harshad Lal Shanker Lal). **A Study of 407 Cases of Epidemic Dropsy.**—*Calcutta Med. Jl.* 1926. Dec. Vol. 21. No. 6. pp. 272–280.

i. This concerns the epidemic in Calcutta popularly called beriberi. The author thinks that is is not true beriberi because: (1) fever is present in almost all the severe cases; (2) eruptions, roseolar or petechial, are very common; (3) there are few or no symptoms of neuritis, no muscular tenderness, no anaesthesia [there is no reference to cardiac symptoms]; (4) the onset in most cases is sudden, with severe vomiting and diarrhoea. The majority of cases were in poor Bengalees living in damp, dark and insanitary one-storied buildings in badly drained areas. All the epidemics in Calcutta have occurred after the rains when fruits and green vegetables are abundant and there is presumably no lack of vitamin B.

ii. The "present epidemic" is inferred to be the same as that noted above, which these authors also distinguish from beriberi. It affected Bengalis, both Hindus and Mahomedans and native Christians, at all periods of life. Most were poor labourers living in low-lying, dark, poorly-ventilated, damp, overcrowded rooms. One-third were attending hospital for some other disease at the time of onset. Almost all were rice-eaters and 350 got their supplies daily from the grocer, i.e., they did not store rice. As evidence of the inadequacy of the deficiency hypothesis the names are given of five previously healthy persons living on a mixed diet. The initial complaint was diarrhoea, epigastric discomfort and swelling over the ankles or tibiae, 102 cases showed profound cardiac symptoms, such as orthopnoea; there is no indication of the fate of these, but in two "the death was sudden."

A. G. B.

Acton (Hugh W.) & Chopra (R. N.). **Further Investigations into the Aetiology of Epidemic Dropsy.**—*Indian Med. Gaz.* 1927. July. Vol. 62. No. 7. pp. 359-362. With 1 plate. [2 refs.] [Calcutta School of Trop. Med.]

The authors refer to their 1925 paper [see this *Bulletin*, Vol. 22, p. 582] in which they attributed the clinical phases of epidemic dropsy and beriberi respectively to differences in the amounts of the neurotoxic and water-soluble bases that result from the decomposition of rice, the

former causing neuritis and the latter dropsy. They now go into the causation of the diarrhoea and fever of epidemic dropsy. In 1926 they investigated a large epidemic that occurred in August to November. This disease in Calcutta is not related to avitaminosis, for then it should be associated with famine conditions, but to the monsoon. A table gives the death rates from "beriberi" in Calcutta from March to the end of the year and weekly from August onwards. Deaths begin to occur in July, rise rapidly in August and remain high in September, October and November. The authors correlate these rates with a fall of 1½ inches of rain on May 18 and very heavy rain (1·2, 5·2, 5·1 inches) which occurred on July 20th–22nd. The first fall caught a large amount of rice in transport to Howrah and Kidderpore and it was those two areas of Calcutta that were the first to be affected. The second rains flooded the whole town, and must have caused much damage to stored rice. The authors write: "In roughly from two to four weeks after the flood the damaged rice reached the market, and about six weeks later the death rate began to increase, as it takes from two to two-and-a-half months for the consumption of the diseased rice to show its influence on the deathrate."

Routine cultures were made from the blood, urine and faeces of patients. The blood cultures [number not stated] were "invariably negative." Catheter specimens of urine were examined from 20 cases and from 9 were grown gut streptococci of *faecalis*, *mitis* or *salivarius* type, and bacilli of intestinal type. It was concluded that as the result of the intestinal irritation by toxins faecal streptococci and bacilli passed into the bloodstream and were excreted by the kidney, the fever being attributable to their destruction in the blood. The bacilluria is compared to that which is seen after the enteric fevers.

Examination of the stools of patients and controls by smear showed that the bacilli present in the former were nearly all gram-positive, while in the controls the majority were gram-negative. It was found that the rice bacillus would not grow on McConkey plates owing to the presence of bile salts, so the stools were cultivated on ordinary agar. Of 20 cases so examined the rice bacillus was grown in six. "These facts show that the organisms can live in the gut above the papilla of Vater." The gram-positive bacilli were very similar in appearance to the young forms of the rice bacillus. The authors think that actively multiplying forms in the diseased rice may be implanted in the gut and passed in the stool; such an occurrence might account for cases of personal infection. A report is given of an autopsy with micro-photographs.

The conclusions are as follows:—

"(1) There is a close association between epidemic dropsy and the wetting of rice by sudden storms or flooding which allows decomposition to start in the rice, and then produces these poisonous bases.

"(2) The excessive humidity that occurs during the monsoon months is also dangerous when rice is stored in stacks and in ill-ventilated godowns.

"(3) The diarrhoea that is produced is due to the action of these water-soluble bases causing oedema of the mucous membrane and exfoliation of the epithelium.

"(4) The damaged mucous membrane now allows the intestinal cocci and bacilli to invade the blood stream and thus produce the fever.

"(5) These organisms can be found in the urine by suitable methods of culture.

"(6) The stools in the acute stage of the disease show large numbers of Gram-positive organisms.

" (7) The rice bacillus can be cultivated from the stools of these cases, provided the medium contains no bile salts.

" (8) It is possible that infections may occur of the stomach and duodenum by these organisms, and under rare conditions the disease may be spread from person to person when contact is intimate."

A. G. B.

SARCAR (Sarasi Lal) & GUPTA (Brajendra Mohon). **Epidemic Dropsy at Sandwip.**—*Indian Med. Gaz.* 1927. May. Vol. 62. No. 5. pp. 254–256.

Sandwip is an island off the mouth of the Ganges, where the authors were sent to investigate an outbreak of epidemic dropsy. Thirty-five persons were found to be affected, 31 of whom belonged to five families, and of these only three escaped the disease, two of whom were aged 2 and 3 years and lived on milk. The attacks were mild and all recovered. The island is fertile, milk is cheap and vegetables may be obtained in abundance. Sufficient rice is produced for local consumption and no rice mill exists. The outbreak occurred just after a period of heavy rainfall, 17 inches in a week. Details are given of the methods of storage of rice—usually in tin sheds with defective floor and roof. The inmates of all the houses, but one, affected used rice imported from Barisal or Rangoon, and those who used such rice but were unaffected did not store it but bought it in small quantities. The inhabitants in general used coarse local rice. The authors seem to assume that the rice contained an infective agent, noting that epidemic dropsy was raging at Barisal. A table gives data of the outbreak and a synopsis of the symptoms.

A. G. B.

ANDERSON (I. R.). **An Apparently Infectious Outbreak of the Epidemic Dropsy Form of Beriberi.**—*Indian Med. Gaz.* 1927. Feb. Vol. 62. No. 2. pp. 71–75. With 1 text fig.

The author describes a small outbreak of epidemic dropsy (18 cases) among the Mission workers of Kalna, Bengal, after the reception of a man and his wife who were suffering from the disease. The cases appeared to be directly traceable to the infected family. These cases were less severe than the original, except for one in a girl of 18, who is said to have died from beriberi (the distinction between the two conditions is very uncertain). The outbreak was strictly limited to the Mission compound, and did not affect the native town of Kalna. It was, however, present in a village 16 miles off. The rice used was the same as that supplied to the town ; all the 9 households infected obtained their supply from the same shop, but enquiry showed no general affection of others from that source. The author thinks that the disease was due not to rice, but to personal infection. He admits that really few of those who came into contact with the patients contracted the disease.

P. W. Bassett-Smith.

SAGAYAM (A. Deva). **An Epidemic of Dropsy among Indians in Fiji.**—*Indian Med. Gaz.* 1927. Sept. Vol. 62. No. 9. pp. 506–507.

In February 1927, dropsy began to appear among the Indians of Fiji and soon was reported from all parts of the Colony. No indication is

given of the numbers affected. The attack started with fever, rising to 101° and subsiding after a few days. Gastro-intestinal symptoms were always present with diarrhoea in the early stages. Oedema of legs and feet was constant ; in a few cases it affected face and body also. It was " firm to the touch, warm on the skin surface " with " a reddish flush," and was slight in the mornings. Peculiar cauliflower-like haemorrhagic growths appeared in many parts of the body (sometimes in 10 sites on one patient), varying in size from a pea to a walnut and bleeding profusely. Some disappeared after a few days; others required ligature. Anaemia was usually present, especially in the later stage. There was no pain in the calves on pressure, no albuminuria, no absence of patella reflex ; heart signs were rare. The symptoms lasted as a rule six to eight weeks. The mortality was low, " the fatal cases usually showing general anasarca towards the end."

The disease was seen among Indians only and was attributed to some article of diet. At first rice was suspected, but the Chinese and Fijians who shared the imported rice with the Indians were not attacked. The author—and in this he is supported by Dr. HARPER, Acting Chief Medical Officer—attributes the outbreak to mustard oil. It appears from a letter from Dr. HARPER that at Suva jail two cooks were attacked in succession, then the gardener, who was a member of the cooks' mess, then the two relieving cooks, but no one else. Now the only persons who received extras in this jail were the members of the cooks' mess who received a double portion of mustard oil and of curry powder five-fold. The curry powder elsewhere proved harmless, so that the mustard oil is incriminated. Its issue was stopped and no more cases occurred.]The evidence incriminating the mustard oil does not quite satisfy.] The author asks whether the disease is identical with the epidemic dropsy of India, whether haemorrhagic growths have been noticed elsewhere and whether any article other than rice has been incriminated.

The Editor adds a note. He presumes that the cooks received an extra ration of rice also, and thinks that this may have been infected rice from Calcutta. He says that the association of sarcoids (bleeding capillary naevi) with the Calcutta epidemic of 1926 was especially noticeable.

A. G. B.

RAY (Charubrata). **Epidemic Dropsy : its Blood Picture, General and Biochemical.**—*Indian Jl. Med. Res.* 1927. July. Vol. 15. No. 1. pp. 67–79. [7 refs.] [Calcutta Med. College.]

This disease is somewhat similar to beriberi. There is a marked drop in red but an increase in white corpuscles, especially in eosinophiles. Coagulation time is about normal. The total nitrogen (especially of protein) is low—urea and creatinine are not affected, but uric acid is high, chlorides are increased, and calcium is usually high also. Cholesterol was not far from normal and pseudo-globulin was much increased ; in some cases there was 3 times the amount of this protein as compared with albumin.

W. D. Halliburton.

PELLAGRA.

GOLDBERGER (Joseph) & SYDENSTRICKER (Edgar). **Pellagra in the Mississippi Flood Area. Report of an Inquiry relating to the Prevalence of Pellagra in the Area affected by the Overflow of the Mississippi and its Tributaries in Tennessee, Arkansas, Mississippi, and Louisiana in the Spring of 1927.**—*Public Health Rep.* 1927. Nov. 4. Vol. 42. No. 44. pp. 2706–2725.

This report deals with the prevalence of pellagra and the conditions responsible for it in the Mississippi flood area. Exact figures of pellagra prevalence were very hard to obtain since at the best of times only one of the four states visited (Mississippi) had anything like morbidity records of this disease and, owing to the disorganization following the flood, even these were very incomplete. As a result of meetings with local physicians, public health authorities etc., the authors were satisfied that the incidence of pellagra in the localities visited (Tennessee, Arkansas and Mississippi) was abnormally high. A house to house canvass was made in the neighbourhood of Indianola between June 20th and July 22nd, 1927, covering an unselected population of 4,179. Among these 102 pellagra cases were recorded, an incidence of approximately 22·4 per 1,000. The authors estimate that in the three areas (Tennessee, Arkansas and Mississippi) the rate is about 10–20 per 1,000 of the rural population.

Another method of investigating the question is to estimate the probable pellagra morbidity in the four states, Tennessee, Arkansas, Mississippi and Louisiana, on the bases of previously recorded deaths. The death rate has increased considerably in these states during the last three years. With this regular increase it can be assumed that the death rate will in 1927 be at least one-quarter to one-third larger than that of 1926. Therefore in 1927, 2,300–2,500 deaths may be expected to occur. Now it has been found that the fatality rate does not exceed 5 per cent. of the total cases. therefore 45,000–50,000 individuals will have suffered a recognizable pellagra attack in these four states during 1927. Probably half of this number will be in the overflow area.

It is impossible to deal adequately with the various economic factors associated with pellagra prevalence. Suffice it to say that "The prevalence of pellagra at any given time in the lower Mississippi River area is involved in three sets of conditions, namely: (*a*) The dietary habits of the inhabitants. (*b*) The tenant farm system of cotton production, cotton being the chief crop throughout the lowlands along the Mississippi and tributary rivers. (*c*) The availability of supplies of various foods which, in turn, is influenced by the one-crop type of agriculture, with the consequent lack of diversification, and by the dietary habits of the people."

It must not be forgotten that the unprofitable cotton crops of 1925 and 1926 had already increased the pellagra rate irrespective of the flood.

The following recommendation is suggested by the authors for the relief of the stricken population in respect of pellagra:

"The appropriate local relief agency or agencies furnish the local health officer with a supply of such non-perishable supplemental "P-P" rich foods as dried pure yeast (preferably the killed culture), canned (chum) salmon, canned beef and canned tomatoes, or adequate funds or credit with which

to purchase such a supply, which he may then distribute on physicians' requisition or otherwise to those in need who are actually sick or present evidence of an impending attack of the disease. Since the vast majority of patients are able to be up, the question of hospitalization will arise only in a relatively small minority. In general, patients properly fed will regain their health and normal vigour in from six to twelve weeks. In the foregoing it is assumed that the patient has a sufficient supply of the basic staple foods."

A. D. Bigland.

KLAUDER (Joseph V.) & WINKELMAN (N. W.). **Pellagra among Chronic Alcoholic Addicts. A Clinical and Laboratory Study.**— *Jl. Amer. Med. Assoc.* 1928. Feb. 4. Vol. 90. No. 5. pp. 364–371. With 14 text figs. [35 refs.] [Philadelphia General Hosp., Lab. of Neuropath. & Res. Inst. of Cutaneous Med., Philadelphia.]

A study is here presented of one hundred patients at the Philadelphia General Hospital who showed pellagra skin appearances. With few exceptions the patients were chronic alcoholics; 71 were males and 29 females. The ages ranged from 25 to 79 and most were Irish Americans.

The history common to nearly all of the patients was chronic alcoholism followed by a debauch lasting weeks or even months, during which practically no food was taken. Not all showed signs of pellagra on admission.

For conveniences of description the cases were divided into three groups: *Group* 1 includes only mild cases with dermatitis on the hands as practically the sole sign. Such patients were only discovered on systematic search. *Group* 2; in these cases the skin lesions were more marked and more widely spread. Soreness of the tongue and diarrhoea were constant. *Group* 3 included all the very serious and acute cases, so called typhoid pellagra, etc. There was a high mortality in this group. Apparently mental symptoms were common to all three groups and were the cause of the patient's admission to hospital.

A very careful description of the skin lesions is given, accompanied by a series of beautiful photographs.

The association between alcoholism and pellagra has long been recognized, mention of it being made in the original reports of CASAL in 1762. Many other references are given from which it appears that the rôle played by alcohol in this disease is widely admitted. An allied condition, chichism, is reported from Colombia, resulting from the abuse of a cheap native maize spirit called chica. In short, chronic alcoholic patients are potential pellagrins.

In a discussion on pseudo-pellagra the authors register their disapproval of the term, especially as applied to the alcoholic type. In their opinion the term pseudo-pellagra or pellagroid should be used for the condition following large doses of sulphomethane, in which a pellagra-like rash occurs and is associated with diarrhoea. Mention is made of other diseases such as ergotism, lathyrism and acrodynia, which may present pellagra-like symptoms.

An attempt to induce pellagra in a monkey injected with the blood and spinal fluid of pellagrins supplemented by a minimum diet and the ingestion of alcohol, proved a failure.

In the section dealing with the neuropathology of the disease the authors discuss the importance of the so-called central neuritis of Adolph MYERS. This condition is similar to that described by NISSL

(1890) in the cells of the fifth cranial nerve nucleus after avulsion of the trigeminal nerve. The chief changes are swelling of the cell, disappearance of Nissl bodies and eccentricity of the nucleus. This change was found in the cells of the cerebral cortex in every one of the eleven pellagra cases examined and very often, too, in alcoholism, especially delirium tremens. Another name for central neuritis is retrograde degeneration. In short, pellagra causes : (1) retrograde cell changes in cortex and spinal cord ; (2) increased lipoid content throughout the entire central nervous system ; and (3) thickening and hyalinization of small vessels in the brain and cord. In uncomplicated alcoholism the last two findings are absent.

A. D. B.

Albertoni (Pietro) & Tullio (Pietro). Alimentazione e pellagra Osservazioni critiche e ricerche sperimentale sopra l'eziologia e la cura della pellagra. [**Diet and Pellagra. Critical Observation and Research on the Causation and Treatment of Pellagra.**]—*Policlinico.* Sez. Med. 1927. Oct. 1. Vol. 34. No. 10. pp. 493–516. [22 refs.]

This paper is mainly a general discussion of the various views which have been brought forward during the last quarter of a century on the question of pellagra and diet. The authors have analysed maize and other foods and estimated the intake and output of carbon, nitrogen, and phosphorus ; also the effects on the body-weight, the dynamometer readings and the blood-estimations during the time that various diets were being taken. They conclude that pellagra is typically a deficiency disease, from the inadequacy of maize as a diet, this article loading the body with carbon while depriving it of nitrogen. Though they are convinced that these are the main facts, they state that the actual substances which are deficient are still undecided.

H. Harold Scott.

Mollow (W.) & Klein (B.). Beiträge zur Klinik der Pellagra. [**Clinical Features of Pellagra.**]—*Abhandl. a. d. Gebiet d. Auslandskunde. Hamburg. Univ.* 1927. Vol. 26. (D., Med. & Vet. Vol. 2.) [Festschrift Nocht.] pp. 349–356. [9 refs.] [Intern. Clinic, Univ. Sofia.]

This paper is divided into two separate sections, the first part dealing with gastric chemistry in pellagra.

Lombroso was the first observer to note gastric symptoms in pellagra, viz. pyrosis, flatulence and anorexia. These symptoms were extremely common, being absent only in six out of all his cases. Lombroso was apparently the first worker to notice achlorhydria in this disease.

Other work dealing with gastric symptomatology in pellagra is quoted and the authors stress, from their own observations, the early appearance of the typical glossitis.

Investigations of the stomach contents were made using the fractiona method. In those cases where achlorhydria was found, a further tes was made by injecting histamine and again examining the gastri contents. It was found that 77 per cent. showed achlorhydria, 11·5 per cent. " anaciditas," i.e., acid production provoked by histamine, and 11·5 per cent. were normal. The results obtained from the examination of 26 cases are embodied in a table.

The second part of the paper deals with the blood picture in pellagra. After reviewing a small section of the literature the authors describe their own findings, which do not differ markedly from the normal. An interesting case is given of an old pellagrin, who had suffered from the disease for twenty-eight years with a recurring rash each spring, and whose blood picture was found to be that of a typical pernicious anaemia. The authors lay stress upon the numerous similarities between these two conditions.

A. D. B.

KIMBER (W. J. T.). **A Case of Pellagra with Recurring Attacks.**— *Jl. Mental Sci.* 1927. July. Vol. 73. No. 302. pp. 433–439. [10 refs.]

After recapitulating the various theories of pellagra etiology the author gives a very full account of a case which was under observation for a period of five years.

The following are the details of the case :—

Female aged 30. Admitted to hospital (apparently Hill End Mental Hospital, St. Albans) March 29th, 1921. Death took place in November, 1926.

The patient was suffering from primary dementia, having been mentally unstable for five years prior to admission. In September, 1921, pellagrous rash appeared, preceded by diarrhoea. In 1922 and 1923 no skin manifestations were noted, but in March, 1924, they reappeared. The diet was then increased by one egg and one pint of milk. In August, 1925, pellagra again appeared without tongue signs or diarrhoea. In the following August, 1926, there was a recurrence associated with typical tongue appearances and diarrhoea. By September the rash had almost vanished but there was a recrudescence in October. One drachm of yeast three times a day was given. Later she developed choreiform spasms and she died suddenly after a convulsive attack involving the face and upper limbs.

Very full post-mortem findings are described, including histology of various organs. These differ in no essential respect from those met with in other cases and therefore do not call for special mention. It is interesting to note that the Betz cells of the cortex showed almost certain central neuritis.

The author comments upon the findings in this case and concludes with a question, "Assuming that vitamin B deficiency is the causative factor, then under what conditions does beriberi occur and what modifications of these conditions produce pellagra ?"

A. D. B.

WHITE (E. Barton) & HADFIELD (Geoffrey). **A Case of Pellagra.**— *Jl. Mental Sci.* 1927. July. Vol. 73. No. 302. pp. 430–433. With 1 plate.

The patient, a married woman aged 28, was admitted to hospital (apparently the Bristol Mental Hospital) in April, 1925. She had been growing pale, thin and irritable for several months.

Condition on admission.—The patient was wasted and the urine showed a trace of sugar. Mentally she was in a state of confusion with ideational inertia. A diagnosis of confusional insanity of the depressed form was made. In two months she was sufficiently improved to be nursed on the verandah. While here she became acutely sunburned, and this was followed by a pellagrous eruption on the face, neck and hands, which later became septic. Intermittent diarrhoea was present and the tongue was swollen, red and ulcerated in one marginal area.

Progress of the Case.—The patient continued to lose weight and the mental condition remained unchanged. The skin condition improved in the autumn and by December it showed dry pigmented thickening in the regions affected. Except for the disappearance of the glycosuria and the appearance of albuminuria, laboratory investigations revealed no interesting changes. In spite of a diet of raw eggs and milk, beef tea, milk pudding and custard together with orange juice and an arsenic and nux vomica mixture, the patient continued to lose weight and in February 1926 there was extreme emaciation and established diarrhoea. The pigmented skin patches became again the site of sepsis and she died early in March of septic absorption.

Post Mortem Examination.—Absence of abdominal fat. Spleen enlarged, red and diffluent. Heart and lungs healthy. Thinning of the mucous membrane lining the whole alimentary tract, but no ulceration. No naked eye abnormality of the nervous system or endocrine organs. (Some of the latter were examined microscopically). In the first two segments of the cervical cord examined the Weigert-Pal method showed considerable marginal and pseudo-systematized demyelinization (well shown in the microphotograph accompanying the paper).

The atrophy of the small bowel was apparently in respect of the lymphoid elements. Unfortunately post-mortem changes prevented full investigation of this point, but subsequent work on another case confirmed the finding.

The skin showed extensive surface keratinization with underlying acute inflammatory changes.

A. D. B.

Mu Jui-Wu. **Pellagra as observed in China: with a Report on One Case in Peking.**—*Nat. Med. Jl. China.* 1927. June. Vol. 13. No. 3. pp. 229–242. With 6 text figs. [30 refs.] [Peking Union Med. Coll., Peking.]

There are no data to show how long pellagra has existed in China. The first case was reported in 1919 and since then a few more have been described by Tyan and by Wu. The author adds one more case the details of which are very full.

Male aged 31, soldier. Observed in Peking Union Medical College Hospital April 12th–June 8th, 1926. He was admitted complaining of a creeping sensation over the whole body of three months' duration and roughness of the skin on the backs of the hands and neck for the last month.

The patient had been a soldier for the last ten years. During the last year he had been stationed at Peking. At first the diet contained rice, cabbage, bean-curd, bean-sprouts, spinach and turnips. This diet was changed about seven months prior to admission to hospital. In the first two months millet was the only cereal eaten; later maize was substituted. For the last seven months the vegetables had consisted only of turnips, cabbage and spinach. Ninety other soldiers under exactly the same conditions had remained free from pellagra. The creeping sensations were so intense that he made more than one attempt at suicide. There were no alimentary symptoms.

On admission he was fairly well nourished and appeared depressed. The hands, forearms and neck showed the pellagra eruption (vide photographs); there was seborrhoea of the face and a very glossy tongue without ulceration. Very elaborate laboratory investigations were made, the most interesting results of which are—ova of ankylostoma in the faeces, achlorhydria, and a high spinal fluid sugar content (111 mgm. per cent.) and protein content.

At first for investigation purposes the patient was kept on his pre-admission diet. The skin of the abdomen was found to be markedly sensitive to artificial sunlight as seen in particularly clear photographs. On April 4th he developed tinnitus and at the same time a rash on the calves.

On April 26th a high protein diet was substituted (approximately 3,000 calories per day). Four days later dilute HCL was given. After about a week the skin lesions had practically cleared, and the patient felt much better. On May 13th the skin sensitiveness to light had markedly decreased. Yeast powder (3 gm. t.d.s.) was tried later, but resulted in no further improvement.

The author discusses the findings in this case and compares them with the observations of others. It is very puzzling why pellagra is so apparently rare in China, where a large majority of the population live on an extremely restricted diet.

A. D. B.

MacCarthy (James T.). **Familial Pellagra in Ireland.**—*Brit. Med. Jl.* 1927. Dec. 24. p. 1180.

The two cases of pellagra here recorded are of interest in that the disease is rare in Ireland and both occurred in one family.

Case 1. Female, married. Seen first in May, 1926. She then complained of weakness and loss of energy. There was marked seborrhoea about the nose and a dermatitis on the hands and forearms. Constipation was present. Seen again June, she had diarrhoea and vulvitis and later in the month she presented all the appearances of an acute pellagra including marked glossitis. She died of exhaustion on June 28th, 1926.

There is the possibility that this was an exacerbation of a chronic condition the patient " having had to go to bed years ago because of a rash about the neck."

The diet was usual for her class and country i.e., " bread, butter and an egg in the morning, potatoes, meat and vegetables (usually cabbage) for dinner, and tea, and cocoa at bed time."

Case 2. Female, married, aged 33 (sister of above). First seen on July 28th, 1926. Miscarriage in October, 1925, since when she had felt weak. Salivation and loss of weight complained of, but there was no diarrhoea. She presented dermatitis of the hands and said that she had this every summer and on the neck also. She recovered on tonic treatment.

The Registrar-General of the Free State informed the author that two deaths from pellagra had been registered in 1922 and 1923, both in females aged 55 and 60 respectively.

A. D. B.

Goldberger (Joseph) & Wheeler (G. A.). **A Study of the Pellagra-Preventive Action of the Cowpea (*Vigna sinensis*) and of Commercial Wheat Germ.**—*Public Health Rep.* 1927. Sept. 30. Vol. 42. No. 39. pp. 2383–2391. [5 refs.]

The author summarizes his paper as follows :—

" 1. The pellagra-preventive action of the cowpea (*Vigna sinensis*) and of commercial wheat germ have been studied.

" 2. The pellagra-preventive factor (P-P) is present in the cowpea (and probably in the soy bean) but in relatively small amounts.

" 3. The pellagra-preventive factor (P-P) is present in commercial wheat germ.

" 4. Commercial wheat germ is probably somewhat richer in factor P-P than is the cowpea.

" 5. It would be advantageous to include in the dietary, particularly of those in the area of pellagra endemicity, milling products of wheat containing as high a percentage as practicable of the germ and the bran.

"6. Added strength is furnished for the view that foods known to contain the so-called vitamin B contain the P-P factor.

"7. The experience with wheat germ constitutes evidence of the soundness of the hypothesis that black tongue of dogs is the analogue of pellagra in man."

A. D. B.

GOLDBERGER (Joseph) & WHEELER (G. A.). **Experimental Black Tongue of Dogs and its Relation to Pellagra.**—*Public Health Rep.* 1928. Jan. 27. Vol. 43. No. 4. pp. 172-217. [8 refs.] [Summary appears also in *Bulletin of Hygiene.*]

A pathological condition in dogs has been produced experimentally by feeding them upon: (1) a diet known to cause spontaneous pellagra in man; and (2) upon a diet which experimentally has given rise to pellagra in man.

This canine experimental condition has been carefully observed. It commences with a stomatitis followed by necrosis and presents features in no way distinguishable from the disease known as Black Tongue, which occurs naturally in dogs. The post-mortem findings, too, present the same similarity and the authors are of the opinion that the two conditions are in fact identical.

Some of the dogs in addition to black tongue developed an eruption on the scrotum very similar to the dermatitis met with in pellagra. Arguments are produced to show that not only are spontaneous and experimentally produced black tongue in dogs one and the same condition, but that they have a common etiology with human pellagra.

A. D. B.

BALLIF (L.) & GHERSCOVICI (I.). La réserve alcaline et la calcémie dans la pellagre. [**The Alkaline Reserve and Blood Calcium in Pellagra.**]—*C.R. Soc. Biol.* 1928. Feb. 10. Vol. 98. No. 5. pp. 393–395. [2 refs.] [Summary appears also in *Bulletin of Hygiene.*]

The normal alkaline reserve of the blood is 65 cc. of CO_2 per 100 cc. of plasma, the maximum being 77 and the minimum 53. Out of 80 serious cases of pellagra, 47 showed an alkaline reserve below 65, 22 below 50 and 5 below 40, while in 6 cases only the alkaline reserve was above 65. The decreased alkaline reserve is accompanied by an increased acidity of the urine. These results were obtained in the spring and summer. During the colder months the general condition of the patients improves and the alkaline reserve returns to normal. The acidosis during the warmer months is ascribed to an acute inflammation of the intestine and abnormal elimination of alkali by profuse diarrhoea. Administration of 10 gm. of sodium bicarbonate in acute cases had no effect on the alkaline reserve or on the acidity of the urine. When the alkaline reserve was below 45 and not modified by sodium bicarbonate, patients usually died. In 10 cases of pellagra examined, the blood calcium was in each case abnormally high (01·5 to 13·5 mgm. per 100 cc.)

Douglas C. Harrison.

HELMINTHIASIS.

JOYEUX (Ch.). La prophylaxie des helminthiases. [**Prevention of Helminthiases.**]—*Rev. d'Hyg. et de Méd. Préventive.* 1927. July. Vol. 49. No. 7. pp. 499–515.

The author disclaims any intention in the present article of writing an original scientific memoir. He has, however, presented recent knowledge from a point of view which is unusual if not original. The exposition is based not upon the zoological grouping of the parasites, but according to the manner in which the host contracts the infection. His chief headings are as follows :—

I. Helminthiasis acquired by ingestion of :

(1) butcher meat ; (2) fish ; (3) crustacea ; (4) water : (*a*) containing microscopic crustacea ; (*b*) as drinking water, or of food and vegetables which have been in contact with water ; (5) accidental ingestion of insects.

II. Helminthiasis contracted by cutaneous penetration :

(1) Larvae living in earth.
(2) Larvae living in water.
(3) Larvae transmitted by insects.

In this fashion the author provides a remarkably clear and informative review of recent advances in medical helminthology.

R. T. Leiper.

KHALIL (M.). **Some Factors influencing the Spread of Ankylostomiasis and Bilharziasis in Egypt.**—*Abhandl. a. d. Gebiet d. Auslandskunde. Hamburg. Univ.* 1927. Vol. 26. (D., Med. & Vet. Vol. 2.) [Festschrift NOCHT.] pp. 232–235. With 2 figs. (1 map) on 1 plate.

Khalil considers in turn the importance of : (*a*) temperature, (*b*) rainfall ; (*c*) irrigation ; and (*d*) subsoil water, in relation to the spread of the two most important infestations of Egypt. *Ancylostoma duodenale* appears to be considerably affected by the variation of temperature, for the incidence of infection increases distinctly towards the north from Cairo, but this is the case also with the density of population. The development of the bilharzia worms in their molluscan intermediate hosts is also affected by temperature. A graph shows the weekly output of cercariae from planorbis throughout the year 1923. In Egypt rainfall is so scanty as to be a negligible factor. Artificial irrigation, owing to the number of small canals and drains which provide for the multiplication of molluscs, plays a great rôle in the spread of bilharzia. Of the two Egyptian species of bilharzia *S. mansoni* is limited in distribution to Lower Egypt, north of Cairo, whereas *S. haematobium* occurs throughout Upper, Middle and Lower Egypt. The rise during recent years in the level of the subsoil water is thought to have favoured the spread of ankylostomiasis, and to have acted indirectly in enhancing the incidence of bilharziasis by preventing the rapid drying of the canals when they are empty.

R. T. L.

DE RIVAS (Damaso). **An Efficient and Rapid Method of Concentration for the Detection of Ova and Cysts of Intestinal Parasites.**—*Amer. Jl. Trop. Med.* 1928. Jan. Vol. 8. No. 1. pp. 63–72. With 3 text figs. [2 refs.] [Dept. of Med. Zool. & Trop. Diseases, Univ. of Pennsylvania, Philadelphia.]

Rivas claims that the following technique is efficient, practical and rapid for the examination of any desired amount of faeces. By previously weighing the specimens the number of eggs and cysts per gram of material can also be determined. One or more grams of faeces are placed in a large or medium sized tube to which an excess of a 5 per cent. solution of acetic acid is added at the rate of about 5 cc. for each gram of material. The mixture is forcibly shaken for about half a minute or so until a more or less homogeneous suspension is obtained. The suspension is allowed to stand for about one half to one minute. The supernatant homogeneous suspension may then be removed by a pipette or filtered with a double layer of cheese cloth or a piece of fine copper wire gauze. To 5 cc. of the filtrate or suspension in a centrifuge tube add an equal quantity of ether. The mixture is forcibly shaken for a few seconds by a rapid motion of the wrist. The mixture is then centrifuged for a few minutes, during which time it separates into four layers with the ethereal extract on top, next the detritus, then the acetic acid and finally at the bottom is the sediment, which may be very scanty. This sediment is pipetted off and examined as a fresh coverglass micro-preparation.

The method can be used also for the detection of " occult " blood and the approximate determination of bile in the faeces. A table is given showing the relative number of ova, protozoal cysts and other bodies found in a single drop of material collected by the concentration methods of TELEMAN, BASS and RIVAS. [No reference is made to Clayton LANE'S method or studies in controls.]

R. T. L.

NEVEU-LEMAIRE. Essai de mammalogie médicale. II. Les mammifères hôtes intermédiaires ou hôtes définitifs des helminthes parasites de l'homme et ceux qui hébergent des parasites qui leur sont communs avec l'espèce humaine. [**Mammalian Hosts of Helminths Parasitic in Man.**]—*Ann. Parasit. Humaine et Comparée.* 1927. Oct. 1. Vol. 5. No. 4. pp. 356–380; 1928. Jan. 1. Vol. 6. No. 1. pp. 107–131. [26 refs.] [Lab. Parasit., Faculty of Med., Paris.]

Neveu-Lemaire continues his article (see this *Bulletin*, Vol. 24, p. 863), on the rôle of mammals as reservoirs and intermediate hosts. The parasites are listed under the hosts, which are arranged systematically. [It is impossible to offer a summary of the details given.]

R. T. L.

BLIGH-PEACOCK (N.). **The Prevalence of Intestinal Worms and the Amount of Illness produced thereby amongst the Banyankole.**—*Uganda Protectorate Ann. Med. & San. Rep. for the Year ended 31st December, 1926.* Appendix No. VII. pp. 93–95.

A somewhat unusual method of diagnosis has been employed by the author in a series of 1,081 consecutive cases of sick persons to discover illness due to intestinal worm infections. A dish containing specimens

of ascaris and tapeworms was exhibited to the patients who were asked to state whether they had seen these objects in their faeces. The diagnosis made by this method was checked by a consideration of the signs of illness and by the results of treatment and are stated to have indicated massive infections with a fair degree of accuracy. At Mbarara and Masaka hospitals a number of deaths have occurred from ascaris infection. No clinical indication of hookworm disease was obtained.

R. T. L.

PHILIP (C. R.). **A Note on Helminthic Infections among Some Coast Natives.**—*Kenya & East African Med. Jl.* 1927. Oct. Vol. 4. No. 7. pp. 207–210.

At Kwale there were 34 prisoners. The faeces of each were examined on three separate occasions. Thirty-two (or 94 per cent.) were found to harbour hookworms. There were 4 cases with Ascaris, 5 with Trichuris, 3 with Strongyloides, 1 with *Taenia saginata* and there was a single case of *Schistosoma haematobium*. The incidence of multiple infestations is indicated in tabular form.

R. T. L.

MORVAN, VOIZARD (F.) & BAIZE. Le parasitisme intestinal des Malgaches (parasitologie, hématologie). [**Intestinal Parasites of Malagasies.**]—*Bull. Soc. Path. Exot.* 1928. Jan. 11. Vol. 21. No. 1. pp. 20–25.

From an examination of the stools of 1,500 Malagasy soldiers the authors observe that almost 85 per cent. are infected with parasites on arriving in France from Madagascar, and that the degree of parasitism drops after a prolonged stay in France. This is doubtless due to the relatively higher standard of hygienic practice during their sojourn there.

R. T. L.

MUKERJI (A. K.). **The Incidence of Helminthic Infections in the Carmichael Hospital for Tropical Diseases, Calcutta.**—*Indian Med. Gaz.* 1927. Dec. Vol. 62. No. 12. pp. 695–696. [1 ref.]

Mukerji tabulates the results of a routine examination of the stools of every patient admitted to the Carmichael Hospital, and the Medical College Hospital, Calcutta, during the year 1925–26. In addition to the commoner parasites of man it is noteworthy that of a total number of 1,524 examined, there were 6 cases of Trichostrongylus infection, 2 of *Heterodera radicicola*, 1 *Fasciolopsis buski* and 1 *Bertiella satyri*.

R. T. L.

DE MELLO (Froilano). Parasites intestinaux de l'Inde portugaise. [**Intestinal Parasites of Portuguese India.**]—*Bull. Soc. Path. Exot.* 1927. July 13. Vol. 20. No. 7. pp. 608–609. [School of Med., Nova Goa.]

During 1925–1926 there were examined in the Bacteriological Laboratory of the School of Medicine of New Goa, India, a total of 596 individuals. Of these 75 per cent. harboured ascaris ; 48 per cent. whipworm ; 32 per cent.

hookworm ; 7 per cent. Strongyloides ; 8 per cent. Oxyuris and 2 per cent. *Taenia solium* and *T. saginata*. Their distribution in the various departments of Goa are included in this brief note.

R. T. L.

Sinelnikov (A. M.). Helminthofaunistische Untersuchung der Schüler von Aschchabad an der prophylactischen Ambulanz für Kinder. [**Examination of Scholars of Askabad for Helminths.**]—*Russian Jl. Trop. Med.* 1927. Vol. 5. No. 8. German summary p. 483. [In Russian pp. 480–482.]

Out of 492 school children in Askabad there were 75 cases of whipworm, 79 of *Hymenolepis nana*, 12 of *Taenia saginata*, 7 of *Ascaris lumbricoides*, 13 of *Oxyuris vermicularis* and 2 of *Ancylostoma duodenale*. *Oxyuris vermicularis* occurred in the appendix in 10 out of 28 cases operated upon for appendicitis.

R. T. L.

Morgan (Julia). **Intestinal Parasitism in Tsinan. As Observed in 1273 Routine Feces Examinations during a Period of 17 Months.**—*China Med. Jl.* 1927. Oct. Vol. 41. No. 10. pp. 847–852.

1,273 faecal examinations were made during 17 months on 976 persons in the laboratories of the Shantung Christian University Hospital, from March 1st, 1925–July 31st, 1926. 62·9 per cent. were negative, 30 per cent. harboured ascaris, 1·1 hookworm, ·7 whipworm, ·6 tapeworm.

R. T. L.

Toyoda (Kazunaga). [**Examination of 823 Spinning Factory Girls in the Muslin Spinnery at Nishinari, Osaka, for Intestinal Parasites.**]—*Osaka Igakkwai Zasshi* (*Jl. of Osaka Med. Soc.*) 1927. Feb. Vol. 26. No. (1). [Summarized in *Japan Med. World.* 1927. Sept. 15. Vol. 7. No. 9. pp. 278–279.]

At Osaka of a total of 823 cases, 437 (53·09 per cent.) showed ascaris eggs, 401 (48·72 per cent.) whipworm and 79 (8·85 per cent.) hookworm.

R. T. L.

Karapetiane (E.). Contribution à l'étude des symptômes cliniques et du traitement de l'helminthiase. [**Clinical Symptoms and Treatment of Helminthiasis.**]—*Russian Jl. Trop. Med.* 1927. Vol. 5. No. 7. French summary p. 469. [In Russian pp. 439–445.]

Investigations on 100 cases at the Erivan Tropical Institute indicate that helminth infections are of great frequency in Armenia. The parasites noticed were *Taenia saginata, Hymenolepsis nana, Oxyuris vermicularis, Trichostrongylus instabilis, Ascaris lumbricoides, Trichuris trichiura* and *Ancylostoma duodenale*. It is stated that helminth infections are almost always a source of nervous symptoms. The changes in the blood are leucopenia, lymphocytosis, presence of Rieder's lymphocytes, considerable increase in globulins, increased rapidity in coagulation. Occasionally anaemia was observed. Arterial tension and muscular activity were lowered. Those infected showed signs of myocarditis. It is recommended that large doses of extract of male fern should be avoided.

R. T. L.

CALDWELL (Fred C.). **The Parasitic Index of the School Children of Panama City.**—*Proc. Med. Assoc. Isthmian Canal Zone.* 1921–1926. Vol. 14. pp. 15–19.

When the Panama Canal was constructed the cities of Panama and Colon were provided with complete sewer systems and every building was supplied with flush closets. An examination of the children in the primary schools in Panama shows that 69·25 per cent. harbour some kind of parasite, 30·08 per cent. hookworms, 40·96 per cent. whipworm, 19·79 per cent. ascaris. Taenia, Strongyloides and Oxyuris fall below 1 per cent. each. Of 409 children found infected with hookworm 36·43 per cent. definitely stated that they had never been out of the city. These infections are due probably to overcrowding and improper use of toilets.

R. T. L.

DE LA BARRERA (J. M.) & RIVA (A.). La Helmintosis intestinal de la población escolar de las provincias de Salta y Jujuy. [**Intestinal Helminthiasis in School Children in the Argentine.**]—*Rev. Inst. Bacteriológ.* Buenos Aires. 1926. July. Vol. 4. No. 5. pp. 469–490. With 1 map. English summary p. 489.

The varying incidence of intestinal helminthiasis in children in schools in the provinces of Salta and Jujuy is not due to the different conditions of living or hygienic habits of the inhabitants, but to variations in geographical features of these regions. In certain isolated districts the degree of parasitism is high but generally speaking this is not the case. Attention is drawn to the occurrence of a very important focus of hookworm in the departments of Ledesma and San Pedro in the province of Jujuy.

R. T. L.

DE RIVAS (Damaso). **A Further Contribution on the Treatment of Parasitic and other Affections of the Intestine by the "Intra-Intestinal Thermal Method."**—*Amer. Jl. Trop. Med.* 1927. Nov. Vol. 7. No. 6. pp. 389–403. With 4 text figs. [2 refs.] [Dept. of Parasit., etc., Univ. of Pennsylvania, Philadelphia.]

The application, intra-intestinally, of saline solution at a temperature of 45° C. to 47° C. is an efficient and safe procedure for the rapid and complete removal of parasites inhabiting the large and small intestine of man. Observations on 500 new cases are recorded to support this claim made in an earlier paper (1926) [see this *Bulletin*, Vol. 23, p. 743].

The method requires careful technique and aseptic precautions. A brief outline of this treatment in a few illustrative cases is given.

R. T. L.

DIKMANS (G.). **Paradichlorobenzene as an Anthelmintic.**—*Jl. Agric. Res.* 1927. Oct. 1. Vol. 35. No. 7. pp. 645–649. [10 refs.]

SOLLMAN (1919) found that dogs tolerated paradichlorobenzene without ill-effects in doses up to 15 gm., but considered the drug to be of little efficacy as an anthelmintic. The author confirms this conclusion, especially in regard to hookworm from experiments on dogs.

R. T. L.

GUIMARAES (Féliciano). Sur le parasitotropisme de l'essence de Chenopodium pour les entozoaires. [**Parasitotropism of Oil of Chenopodium.**]—*C.R. Soc. Biol.* 1927. May 13. Vol. 96. No. 15. pp. 1251–1253. With 2 text figs. [1 ref.]

Following a procedure analogous to that introduced by STRAUB, the author has obtained much better results in graphically demonstrating the toxic action of chenopodium by substituting for earthworms the *Ascaris lumbricoides* from pigs. Concentrations of 1 per 1,000 kill the parasites within 20 minutes. The contractions of fragments of *Ascaris lumbricoides* and of *Gigantorhynchus hirudinaceus* kept at a temperature of 38° in Bunge's fluid (i.e., a solution of 1 per cent. NaCl, and ·1 per cent. Na_2CO_3), were graphically recorded. The graphic method indicates that the oil of chenopodium is the most toxic vermifuge for these worms.

R. T. L.

GUIMARAES (Féliciano). Action de l'essence de *Chenopodium* sur les vers de terre. [**Action of Oil of Chenopodium on Earth Worms.**]—*C.R. Soc. Biol.* 1927. May 13. Vol. 96. No. 15. pp. 1249–1250.

This brief note indicates somewhat vaguely that earthworms are poisoned by various dilutions of chenopodium, santonin, thymol, etc., in various solvents. The author states that these studies have been commenced with a view to standardization.

R. T. L.

ACKERT (James E.) & OTTO (Gilbert F.). **Helminthiasis and the Thyroid Gland.**—*Amer. Jl. Trop. Med.* 1927. Sept. Vol. 7. No. 5. pp. 339–347. With 1 text fig. [10 refs.] [Agric. Experim. Sta., Kansas State Agric. College, Manhattan, Kansas.]

Using the intestinal roundworm *Ascaridia lineata* of chickens, the authors have failed to find any significant change in the size of the thyroid glands or in their histology, and they have failed to confirm the suggestion of a relationship between helminthiasis and pathological thyroid glands which has recently been made.

R. T. L.

KENYA & EAST AFRICAN MEDICAL JOURNAL. 1927. Nov. Vol. 4. No. 8. pp. 256–259. **Simple Notes on Some Tropical Diseases. A Popular Account of the Commoner Diseases of East Africa, with Hints on General Lines of Treatment, for the Use of Those Out of Reach of Immediate Medical Assistance. III. Intestinal Worms.**

This is merely a popular account of intestinal worms of man in E. Africa with hints on general lines of treatment for those out of reach of immediate medical assistance.

R. T. L.

NICOLL (William). **A Reference List of the Trematode Parasites of Man and the Primates.**—*Parasitology.* 1927. Sept. Vol. 19. No. 3. pp. 338–351. [120 refs.] [Virol Path. Research Labs., London.]

Nicoll has already published several invaluable lists dealing with the trematode parasites of various groups of vertebrates, but this latest addition, on the same ground plan, is of more than usual interest to the student of tropical hygiene. The failure to realize that many of the

parasites which infest man may also be found in other mammals and that various mammals may harbour forms actually different from, but closely resembling those in man is held to be one of the chief reasons for the superfluity and confusing redundancy of synonyms in the nomenclature of certain parasites of man. It is noted that as far as the Trematodae are concerned there is not a particularly close correspondence between the parasites of man and those of other primates. Indeed many are more commonly associated with the cat and dog and with domesticated stock. The first recorded trematode in man (1790) was *Fasciola hepatica* named on that occasion by GMELIN as *F. humana*; a second early record (1803) was *Dicrocoelium lanceatum*. No further additions occurred for nearly fifty years when (1852) BILHARZ found the blood fluke named after him.

In the author's opinion two publications of the highest importance in systematic helminthology were published in 1926, viz., STILES & HASSALL's "Key Catalogue of the Worms reported for Man." and POCHE's "System der Platodaria." A most interesting dissection of certain of POCHE's recent decisions and an entertaining and shrewd discussion of their implications follows. The appended list of parasites gives as far as possible all references to primary records and to the most accurate or comprehensive of subsequent descriptions.

R. T. L.

NAGANO (Kanji). **A Collecting Method of Metacercariae.**—*Okayama-Igakkai-Zasshi*: (*Zent. d. Okayama Med. Gesellsch.*) 1927. Sept. Vol. 39. No. 9. (No. 452). pp. 1313–1314. With 2 figs. on 1 plate. [Dept. Anatomy, Univ., Okayama.]

The process of recovering metacercariae from intermediate hosts by micro-dissection is laborious and unsatisfactory. Experimental feeding is also limited in application. The author recommends digestion in an artificial gastric juice kept at 37 °–40° for 2 or 3 hours. Thereafter the cysts set free by the process may be concentrated by a slight rotatory motion of the dish owing to their high specific gravity. The method relies upon the established fact that the larvae do not escape from the cysts in the stomach of the definitive host.

R. T. L.

WALTON (C. L.) & WRIGHT (W. Rees). **Further Observations and Experiments on the Control of Liver Fluke.**—*Jl. Ministry Agric.* 1927. Nov. Vol. 34. No. 8. pp. 734–739. [8 refs.] [Dept. Agric., Univ. Coll. N. Wales, Bangor.]

Under laboratory conditions the egg masses of *Limnaea truncatula* cannot survive desiccation for more than 12 hours, and dilutions of $CuSO_4$ solution up to 1-10 per cent. are lethal within 48 hours. Although newly hatched *L. peregra* and Aplexa were killed by freezing; freezing did not adversely affect eggs or adults of *L. truncatula*. This is in accord with field observations. The adult *Limnaea truncatula*, although killed by direct desiccation, can resist drought conditions longer than other species such as *L. peregra*, *L. palustris*, Aplexa sp. and Planorbis living in association with it.

R. T. L.

Takahashi (Sohzaburo). [**Development History of Fasciola hepatica. L. with Special Reference to the Intermediate Host.**]—*Fukuoka Ikadaigaku Zasshi* (*Jl. Fukuoka Med. Soc.*) 1927. May. Vol. 20. No. 5. [Summarized in *Japan Med. World.* 1927. Nov. 15. Vol. 7. No. 11. p. 336.]

Lymnaea pervis Mart. and *Lymnaea sp* ? have been shown experimentally to be intermediate hosts of *Fasciola hepatica* in Kyushu, Japan.

R. T. L.

Heydon (G. M.). *Paragonimus ringeri* **in a New Guinea Native.**—*Med. Jl. Australia.* 1927. Sept. 24. Supp. No. 7. pp. 204–205. With 1 text fig. [4 refs.] [Australian Inst. Trop. Med., Townsville, Queensland.]

Two specimens of *Paragonimus* were found post-mortem in the lung of a native of New Guinea by Dr. Backhouse. From an examination of the spines on the skin between the oral and ventral suckers the author concludes that the worms belong to the species *ringeri*.

R. T. L.

Hayashi (K.) & Igari (D.). **A Case of Nodules at Bottom of Hernia-Sac in Scrotum, caused by Eggs of** *Paragonimus westermani.*—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1927. Aug. No. 269. English summary p. 4. [In Japanese.]

A case is recorded in which variously sized nodules were discovered at the bottom of a replaceable hernia sac and are stated to have been due to the eggs of Paragonimus, the adults of which it is assumed had at one time inhabited this situation.

R. T. L.

Ando (Akira) & Tohtaro (Kobori). [**A Contribution to the Biological Studies of Trematodes. I. Relation between** *Paragonimus westermanii* **and Ferments.**]—*Aichi Igakkwai Zasshi* (*Jl. Aichi Med. Soc.*). 1927. Jan. Vol. 24. No. 1. [Summarized in *Japan Med. World.* 1927. Aug. 15. Vol. 7. No. 8. pp. 241–242.]

Whereas certain other trematodes found in the dog rather dislike oxygen the larvae and adults of *Paragonimus westermanii* tend to agglomerate "at the puffing tip of oxygen gas 0·6 per cent. saline." These facts tend to indicate the reason why Paragonimus thrives better in the lungs than in any other organ.

R. T. L.

Pilod, Codvelle & Hugonot. Un cas de splénomégalie d'apparance primitive d'origine distomienne. [**A Case of Splenomegaly, apparently Primary, due to Clonorchis.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1928. Jan. 19. Year 44. 3rd Ser. Vol. 52. No. 1. pp. 18–23.

Enlargement of the spleen is commonly associated with malaria, leishmania and bilharzia. The author attributes the splenic enlargement in a case of which he gives a detailed clinical account to the presence of large numbers of *Clonorchis sinensis* in the bile ducts. There was no ascites or jaundice and no change in the blood. The liver itself

showed no perceptible lesions and the splenic enlargement, while considerable, was discovered by chance. The diagnosis was reached by a process of exclusion.

R. T. L.

Sioe (Kwa Tjoan). Clonorchiosis. [**Clonorchiasis.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1927. Vol. 67. No. 2. pp. 297–309.

The author, working at Batavia, saw 7 cases of clonorchiasis, 4 of which are quoted in some detail. The clinical picture showed the usual features and eggs of the parasite were present in the stool in all the cases. The infection was exclusively found in Chinese (6 Hakka, 1 Kongfu). No cases are published so far concerning natives of the Dutch East Indies. This makes it probable that the author's patients had all been infected in China. If this presumption is right, it may be deduced from the history of one of the patients that the parasites may live for over 12 years in the human liver. The damage to the liver, which is the ultimate result of the infection, justifies treatment, even in cases in which no clinical symptoms are present. As regards treatment the author recommends gentian-violet and (more reluctantly in view of its by-effects) tartar emetic. In cases in which no results are obtained by these drugs or in which some contra-indication forbids their administration carbonas guaiacol (300 mgm. per day) may have a very satisfactory symptomatic effect.

W. J. Bais.

Olivier (P. H.) & Kandou (R.). De behandeling van Clonorchiasis sinensis met Gentiaanviolet Grübler. [**The Treatment of *Clonorchis sinensis* Infection with Gentian Violet Grübler.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1927. Vol. 67. No. 1. pp. 59–63. [6 refs.]

Though other drugs (such as tartar emetic, mercurochrome) may be used with success in the treatment of clonorchiasis in the comparative experiments of Faust (see this *Bulletin*, Vol. 23, p. 755) gentian violet gave the most satisfactory results. This induced the authors to give the drug a trial in a case of uncomplicated clonorchiasis in a Chinese. The eggs disappeared from the faeces, and clinical recovery resulted after intravenous injection of 1 per cent. gentian violet Grübler, 20 cc., followed after 3 days by 30 cc. The cure had no by-effects, except the peculiar discoloration of the skin immediately after the injection and the violet colour of the urine.

The authors think that in other cases with more advanced fibrous alteration of the hepatic tissue the parasites may be not so easily accessible to the drug, and a cure may be more difficult to attain.

W. J. Bais.

Wayson (N. E.). **Clonorchiasis Investigations. A Summary of Surveys and Experiments to determine whether Clonorchiasis may be disseminated on the Pacific Slope of the United States.**—*Public Health Rep.* 1927. Dec. 23. Vol. 42. No. 51. pp. 3129–3135. [2 refs.]

These surveys and experiments have led to no definite conclusions. No known Asiatic vector has established itself on the Pacific Slope and no native species has yet been implicated by laboratory experiment as a potential carrier.

R. T. L.

Ito (Kuwataro). [**Blood Features of the Rabbit's Experimental Clonorchiasis.**]—*Aichi Igakkwai Zasshi* (*Jl. Aichi Med. Soc.*). 1927. Feb. Vol. 37. No. 2. [Summarized in *Japan Med. World.* 1927. Sept. 15. Vol. 7. No. 9. p. 275.]

In rabbits experimentally infected with clonorchiasis the eosinophiles increased in all cases during the initial fortnight and then began to decrease. Lymphocytes and leukocytes, large mononuclears, transition forms and blood platelets showed no marked changes in slight and moderate cases. In serious or lethal cases the erythrocytes decreased abruptly. The leukocytes increased suddenly in the second week and in some lethal cases the eosinophiles abruptly decreased just before death.

R. T. L.

Kobori (Kohtaro). [**Contribution to the Study of the Second Intermediate Host of** *Clonorchis sinensis*. **I. Supplementary Host,** *Pseudogobio eocinus*, **occurring in the Vicinity of Nagoya City.**]—*Aichi Igakkwai Zasshi* (*Jl. Aichi Med. Soc.*). 1927. Feb. Vol. 37. No. 2. [Summarized in *Japan Med. World.* 1927. Sept. 15. Vol. 7. No. 9. p. 275.]

The English abstract in the *Japan Med. World* adds nothing to the title concerning the contents of this Japanese paper.

R. T. L.

Pigoulévsky (S. W.). Quatre cas de dicrocoeliose dans le vieux Taschkent. [**Four Cases of Dicrocoeliasis in Tashkent.**]—*Pensée Méd. d'Usbékistane.* Tashkent. 1927. No. 5. French summary pp. 85–86. [In Russian pp. 39–41.]

Dicrocoelium infection is very prevalent in sheep, cattle and goats in old Tashkent. Two cases in man have been recorded, one by Dr. Lyssenko, the other by Dr. Wassieliewa while several unpublished instances have been observed by Drs. Semionow and Kéworkow. During an investigation extending over a period of six weeks the author has found four new cases. In one of these the infection was associated with *Fasciola hepatica* and *Hymenolepis nana*. In a second case *Hymenolepis nana* and *Enterobius vermicularis* also occurred, while in the two remaining cases no other parasites were found. In all the cases the number of eggs present in the stools was insignificant. The numbers were increased in the first few days of treatment with emetine.

R. T. L.

Pigoulesky (S. W.). Dicroceliose humaine en Asie moyenne Russe. [**Dicrocoeliasis in Man in Russian Asia.**]—*Russian Jl. Trop. Med.* 1927. Vol. 5. No. 8. French summary p. 534. [In Russian pp. 483–485. 5 refs.]

Thirty-one cases of infection of man with *Dicrocoelium lanceatum* [*dendriticum*] were noticed during faecal examinations of the population of Tashkent. This parasite was also observed in 50 per cent. of cattle slaughtered in the local abattoir.

R. T. L.

STROM (J.). **On False Distomatoses in the Liver of Man.**—*Rev. Microbiol. et Epidémiol.* 1927. Vol. 6. No. 4. English summary pp. 476–477. [In Russian pp. 433–437.] [Inst. of Trop. Med., Uzbekistan.]

Absence of symptoms of disease of the liver and failure to find eggs on repeated occasions has suggested that the eggs found in the faeces in some cases have been derived from the consumption of liver of cattle as food. This has now been experimentally demonstrated to follow the eating of liver infected with *Fasciola hepatica* and *Dicrocoelium dendriticum*. Doubtless some of the cases of these infections in man already on record belong to this category.

R. T. L.

KHALIL (M.). **The Eradication of Bilharziasis : a Successful Attempt in an Endemic Area.**—*Lancet.* 1927. Dec. 10. p. 1235. [3 refs.]

Of the inhabitants of one of the villages in the Oasis Dakhla, situated 450 kilometres to the west of the Nile, 63·5 per cent. are infected with *S. haematobium*. The main stream of the village is of artesian origin and was found to contain large numbers of Bullinus snails. The addition of copper sulphate continuously for four days and four nights to this artesian water resulted in the death of the bilharzia carriers. The area was revisited six months later and no living Bullinus snails could be found.

The author gives to a brief note of this interesting trial a somewhat premature title.

R. T. L.

IBRAHIM (Ali). **The Problem of Bilharziasis in Egypt.**—*Jl. State Med.* 1927. Dec. Vol. 35. No. 12. pp. 702–708.

The author considers the use of copper sulphate for the control of bilharziasis on a large scale in the Nile Valley to be impracticable, although the method would be of great use in dealing with rice fields and small canals.. At present Egypt is divided into four districts for purposes of irrigation. He suggests that on each consecutive year irrigation should be completely stopped in one of these four divisions during three summer months—the Department of Public Health to concentrate on the area all their activities for the treatment of infected cases.

R. T. L.

FRANÇA (Carlos). Observations sur la bilharziose. [**Notes on Bilharziasis.**]—*Bull. Soc. Portugaise des Sci. Nat.* 1925. Nov. Vol. 10. No. 5. pp. 63–77. [9 refs.]

1. The author is of opinion that the reduced size of the specimens of *Planorbis dufourii* found at Atalaia, Portugal, is due not merely to the temperature of the water, but to the constant and massive infection to which the snails are liable on account of the small area and high temperature in which they live.

2. He believes that the granular eggs which result from treatment in bilharzia cases are due to the effect of the drug in inducing abortion in the adult female worms.

3. He draws attention to the fact that in Angola and in W. Africa the majority of cases of intestinal bilharziasis are due to *S. haematobium*. In the region of Bengo he obtained a certain amount of evidence pointing to *Physalopsis globosa* as the intermediate host of *S. haematobium*. In the region of Chibia large numbers of *Planorbis pfeifferi* occur. This species has been demonstrated by Annie PORTER in S. Africa to be the host of *S. mansoni*, yet all the cases of infection which have been studied at Chibia have been infections with *S. haematobium*.

R. T. L.

THOMSON (J. H.). **Notes on Schistosomiasis.**—*Tanganyika Territory Ann. Med. & San. Rep. for the Year ending 31st December, 1926.* pp. 103–104.

Bilharzia disease (*S. haematobium*) is common around Mwanza: on the side of Smith's Sound, in Urima and Sima to the south of the Sound. Most of the 63 cases treated during the year came from the school at Nassa on the Speke Gulf. Inter-rectal [*sic*] injections of tartar emetic did not appear to do much good. A few cases on bismuth 20 grains weekly cleared up and were all discharged.

R. T. L.

FAIRBAIRN (H.). **Vesical Bilharzia: Double Infection with *S. haematobium* and *S. mansoni*.** [Memoranda.]—*Brit. Med. Jl.* 1928. Jan. 14. p. 52. [1 ref.]

COLEMAN (Robert B.). **Vesical Bilharzia: Double Infection.** [Memoranda.]—*Ibid.* Feb. 4. p. 177. [1 ref.]

Fairbairn describes from Tanganyika three cases of lateral spined eggs associated with terminal spined eggs in the urine. Coleman reports that at the C.M.S. Hospital, Old Cairo, Egypt, patients with vesical bilharzia, showing double infection with *S. haematobium* and *S. mansoni* have frequently been observed, and he refers to his previous publication on the subject.

R. T. L.

HUTCHISON (Harry S.). **The Pathology of Bilharziasis.**—*Amer. Jl. Path.* 1928. Jan. Vol. 4. No. 1. pp. 1–16. With 14 figs. on 6 plates. [13 refs.] [Depts. of Path., Western Reserve Univ. & Cleveland City Hosp., Cleveland, O., & American Mission Hosp., Tanta, Egypt.]

Bilharzia worms and ova in the tissues induce a primary inflammatory reaction of a non-suppurative nature. They have no inherent capacity to produce ulceration. The latter seems to depend on secondary bacterial invaders acting on tissues of diminished vitality. Abscess formation has not been seen in the deeper tissues or in the abdominal organs. The ova, at first surrounded by inflammatory cells, become isolated by fibroblasts and giant cells of the foreign body type. Ultimately a granuloma forms, the characteristic unit of which is the

bilharzial pseudo-tubercle. The bilharzia worms produce nocuous substances which are probably the result of simple protein splitting rather than toxin production.

R. T. L.

Brumpt (E.) & Werblunsky (S.). Infection expérimentale d'un mollusque de Corse (*Bullinus contortus*) par le *Schistosoma haematobium*, agent de la bilharziose vésicale. [**Experimental Infection of a Corsican Mollusc by** *S. haematobium*.]—*Bull. Acad. Méd.* 1928. Jan. 31. Year 92. 3rd Ser. Vol. 99. No. 5. pp. 153–155.

Dollfus (1922) and more recently Anderson (1927) have drawn attention to the risk of introduction of schistosomiasis into Corsica, where *Bullinus contortus* occurs, through infected persons, and particularly soldiers of African origin, entering the island from districts where urinary bilharziasis is endemic. It is pointed out that the conditions are very favourable for the development of an endemic centre in the region of Porto Vecchio.

R. T. L.

Fairley (N. Hamilton) & Williams (F. Eleanor). **A Preliminary Report on an Intradermal Reaction in Schistosomiasis.**—*Med. Jl. Australia.* 1927. Dec. 10. 14th Year. Vol. 2. No. 24. pp. 811–818. [17 refs.] [Walter & Eliza Hall Inst., Melbourne.]

With antigen derived from the dried powdered livers of snails infected with *Schistosoma spindalis* the authors have obtained a new intradermal skin test for bilharziasis. The reaction is characterized by a rapidly appearing large white wheal surrounded by a zone of erythema. Delayed reactions occur 3 to 24 hours after the initial injection. Seven out of eight patients with *S. haematobium* gave immediate reactions and three of them showed delayed responses. The test is of diagnostic value only and does not afford an indication of the success of treatment, for two patients, who were regarded as cured both on serological and clinical grounds, gave positive reactions.

R. T. L.

Tootell (George T.). **Further Observations on the Treatment of Schistosomiasis Japonica.**—*China Med. Jl.* 1927. Aug. Vol. 41. No. 8. pp. 718–722. [3 refs.]

Five cases of Schistosomiasis japonica were treated with antimosan. One had severe reactions, but generally the reactions were milder than with tartar emetic. Antimosan proved to be almost as effective, but its present cost renders it prohibitive for routine use. Eight patients were given mercurochrome. There were very severe reactions and uncertain effects and the drug does not appear to be a satisfactory one for use in this disease. Twelve cases were treated with tartar emetic. Treatment averaged 23 days for those cases which were apparently cured. The moderately severe reactions produced by this drug and the length of time required for cure, make it important to continue the search for a more efficient drug.

R. T. L.

HOFFMAN (William A.). **Studies on Schistosomiasis** (*S. mansoni*) **in Porto Rico. I. Preliminary Report on the Distribution of** *S. mansoni*.—*Porto Rico Rev. of Pub. Health & Trop. Med.* 1927. Dec. Vol. 3. No. 6. pp. 223–230. With 1 text fig. & 1 map. [5 refs.] [School of Trop. Med., Univ. of Porto Rico.]

Planorbis guadeloupensis, already implicated as the carrier of intestinal bilharziasis elsewhere in the New World, has been shown by the author to be the common carrier in Porto Rico. Rats have been experimentally infected from naturally infected snails. The intermediate host occurs abundantly in irrigation ditches around Guayama and at least 8 per cent. were found naturally infected. Utuado is an important centre of the disease, which was found in 8 out of 10 districts investigated, so that infection is much more widely distributed in Porto Rico than has hitherto been supposed. These surveys are being continued.

R. T. L.

LAMBERT (Robert A.). **Studies on Schistosomiasis** (*S. mansoni*) **in Porto Rico. II. Preliminary Report on Findings in 100 Routine Autopsies.**—*Porto Rico Rev. of Pub. Health & Trop. Med.* 1927. Dec. Vol. 3. No. 6. pp. 231–234. [2 refs.] [School of Trop. Med., Univ. of Porto Rico.]

Of the first 100 cases examined specifically for bilharzia in the course of routine post-mortem examinations in the Pathological Laboratory of the School of Tropical Medicine of the University of Porto Rico, 11 cases showed evidence of existing or recent infection. Only in 2, however, was bilharzia the direct cause of death. In these there were lesions of advanced cirrhosis of the liver. An additional case was afterwards found during the examination of an ovary removed by the surgeon.

R. T. L.

WALRAVENS (P.). Le traitement de la bilharziose. [**Treatment of Bilharziasis.**]—*Ann. Soc. Belge de Méd. Trop.* 1927. Nov. Vol. 7. No. 2. pp. 181–183. [1 ref.] [Bact. Lab., Elisabethville, Belgian Congo.]

The author gives brief notes on six cases of bilharzia treated with stibosan and five cases with antimosan by intravenous injection.

R. T. L.

ASADA (Junichi). [**On a New Species of Trematodes found Parasitic in the Dog in Tokyo. A Contribution to the Knowledge of the Distribution of Trematodes of the Dog.**]—*Tokyo Iji-Shinshi* (*Tokyo Med. News.*) 1927. May. No. 2522. [Summarized in *Japan Med. World.* 1927. Oct. 15. Vol. 7. No. 10. pp. 303–304.]

In 160 stray dogs, in Tokyo, eight trematode species were discovered, viz., *Clonorchis sinensis* (7 cases), *Pygidiopsis summus* (3 cases), *Metagonimus yokogawaii* (9 cases), *Heterophyes nocens* (2 cases), *Heterophyes continus* (3 cases), *Echinochasmus elongatus* (2 cases), *Echinostoma conetorchis* (2 cases), and *Echinostoma hortense* (1 case). An unnamed new species is mentioned as closely related to *Aptorchis oegnalis*.

R. T. L.

Joyeux (Ch.) & Houdemer (E.). Recherches sur la faune helminthologique de l'Indochine (cestodes et trematodes). [**Cestodes and Trematodes of Indo-China.**]—*Ann. Parasit. Humaine et Comparée.* 1927. Oct. 1. Vol. 5. No. 4. pp. 289–309; 1928. Jan. 1. Vol. 6. No. 1. pp. 27–58. With 14 text figs. [90 refs.] [Lab. Parasit., Faculty of Med., Paris.]

This paper contains a systematic account of a considerable number of tapeworms found in various hosts in Indo-China. Those of medical interest mentioned are *Taenia saginata*, the cysticercus of which is frequently found in beef at Hanoi; 11·76 per cent. of the cattle there are infested. *Cysticercus cellulosae* is recorded from pigs and is stated to be rare in the dog (·14 per cent.). Hydatid is very common in cattle and is especially so in pigs.

R. T. L.

Essex (Hiram E.). **Early Development of *Diphyllobothrium latum* in Northern Minnesota.**—*Jl. Parasit.* 1927. Dec. Vol. 14. No. 2. pp. 106–109. With 5 text figs. [2 refs.] [Zool. Lab., Univ. of Illinois.]

The eggs of *D. latum* hatched after an incubation period of 9 to 12 days, the majority requiring 11 days. As *Cyclops strenuus* could not be found in Minnesota, eight other species were used for experiment. In *Cyclops brevispinosus* and *C. prasinus* embryos were found in the intestine a few hours after feeding but in no case did infection actually occur. Experiments with *Diaptomus oregonensis* were more successful. The author illustrates and describes the various phases of development and in these matters closely agrees with the results of Janicki and Rosen [see this *Bulletin*, Vol. 17, p. 66].

R. T. L.

Joyeux (Ch.) & Baer (J. G.). Sur quelques larves de bothriocéphales. [**Larvae of Bothriocephalus Species.**]—*Bull. Soc. Path. Exot.* 1927. Nov. 9. Vol. 20. No. 9. pp. 921–937. With 4 text figs. [24 refs.] [Parasit. Lab., Faculty of Med., Paris.]

The authors have studied the adult tapeworm developed in the cat and dog from Plerocercoides found in the snake *Tropidonotus natrix*. They have found experimentally that the procercoid stage can develop in *Cyclops fuscus*. The adult worm is identified as *Diphyllobothrium ranarum* which in their opinion is the same as *D. reptans* over which it has priority. They have shown experimentally also that the plerocercoids of this parasite can undergo a sexual multiplication in frogs.

R. T. L.

Lopez-Neyra (C. R.). Considérations sur le genre *Dipylidium* Leuckart. [**Notes on the Genus *Dipylidium*.**]—*Bull. Soc. Path. Exot.* 1927. May 11. Vol. 20. No. 5. pp. 434–440. [1 ref.]

The genus *Dipylidium* Leuckart 1863, contains about thirty species, of which only eighteen are well known. The author discusses the various morphological types found within the genus and considers that three distinct genera must be recognized viz.:—

I. Dipylidium. Type species *D. caninum* (Linnaeus 1758) and 11 additional species: *D. oerleyi* (v. Ratz 1900), *D. sexcoronatum* (v. Ratz 1900), *D. walkeri* (Sondhi 1923), *D. rossicum* (Skriatin 1923),

D. halli (Tubangui 1925), *D. baencaminoi* (Tubangui 1925), *D. gracile* (Millzner 1926), *D. compactum* (Millzner 1926), *D. diffusum* (Millzner 1926), *D. longulum* (Millzner 1926), *D. crassum* (Millzner 1926).

II. Joyeuxia n. gen., Type species *D. chyzeri* (Diamare 1892) with 4 additional species: *J. pasqualei* (Diamare 1892), *J. echinorhynchoides* (Sonsino 1889), *J. gervaisi* (Setti 1895), *J. fuhrmanni* (Bare 1924).

III. Diplopylidium. (Beddard 1913). Type species: *D. genettae* (Beddard 1913) and 7 additional species, viz., *D. trinchesei* (Diamare 1892), *D. triseriale* (Lühe 1896), *D. monoophorum* (Lühe 1898), *D. columbae* (Fuhrmann 1909), *D. zschokkei* (Hungerbühler 1910), *D. quinquecoronatum* (Lopez-Neyra & Munoz 1921), *D. noelleri* (Skriabin 1924).

The above classification does not include four species which have been insufficiently described, viz. *D. genettae* (Gervais 1847), *D. monticelli* (Diamare 1893), *D. avicola* (Fuhrmann 1906) and *D. dongolense* (Beddard 1913).

R. T. L.

Scrimaglio (E. F.). [*Hymenolepis nana.*]—*Revista Méd. d. Rosario.* Rosario de Santa Fe. 1927. Aug. Vol. 17. p. 401. [Summarized in *Jl. Amer. Med. Assoc.* 1927. Dec. 17. Vol. 89. No. 25. p. 2148.]

Nine cases of *Hymenolepsis nana* occurred among 600 persons. Vast numbers of eggs were fed to rats without results. The author concludes that the rat is not an intermediary. Eosinophilia was an inconstant feature of the cases.

R. T. L.

Barnett (L. E.). **Colossal Hydatid Cysts.**—*Med. Jl. Australia.* 1927. Dec. 24. 14th Year. Vol. 2. No. 26. pp. 878–882. With 5 text figs. [4 refs.]

Describing the largest hydatid cyst or accumulation of cysts on record Sir L. E. Barnett points out that these huge cysts have in common a precedent effusion of bile into the abdominal cavity which he considers to be an essential factor in permitting the subsequent growth of abdominal hydatid cysts to super dimensions. The patient was an Otago countryman aged 39. The quantity of fluid and the contained daughter cysts evacuated was 50 litres (eleven gallons). The eosinophile count was only 2 per cent.

R. T. L.

Matthiasson (Steingrimur). **Hydatid Disease in Iceland.**—*World's Health.* 1927. Nov. Vol. 8. No. 11. pp. 408–411. With 3 text figs.

About 60 years ago hydatids were so common in Iceland that Dr. J. Finsen estimated that about 2 per cent. of the population were infected. The most recent statistics indicate that less than 1 in 1,500 is affected. This remarkable decrease is attributed to the law passed in May 1890 controlling the dogs by taxation and treatment and enforcing the burial or burning of hydatid infected material. The number of dogs per head of population has been reduced from 1 to every 3 or 5 persons to 1 per every 15 persons.

R. T. L.

GUTHRIE (Neil). **The X Ray Examination of Intrathoracic and Subdiaphragmatic Hydatid Disease and its Complications.**—*Med. Jl. Australia.* 1927. Nov. 5. Supplement No. 11. pp. 324–326. [3 refs.]

The detection of an uncomplicated hydatid cyst by X-rays may depend upon the increased or decreased radiability of the pericystic medium. In bone the X-ray will demonstrate the "cavitation." Typical cystic appearances of the lung are frequently masked by complications. Sarcoma of the lung may present appearances indistinguishable from hydatid. Secondary metastasis of the embolic type can be recognized since the primary tumour elsewhere will be detected. A very large cyst may closely resemble a large pleural effusion. The X-ray appearances of spontaneous rupture into the pleural cavity may be those of a large hydrothorax. Except where the disease is located on the upper surface of the liver or spleen an ordinary X-ray examination will be of little assistance with abdominal hydatid cases. Radiological examination is of great value to the surgeon in illuminating post-operative complications, such as incomplete drainage, hydropneumothorax, recession of the lung, lung abscess and hydrothorax.

R. T. L.

STAWELL (R. R.). **The Medical Aspect of Hydatid Disease.**—*Med. Jl. Australia.* 1927. Nov. 5. Supplement No. 11. pp. 323–324.

Hydatid infection occurs most commonly in childhood. The so-called toxic symptoms are manifestations of anaphylaxis. Absorption of hydatid poison occurs whenever the cyst is injured, even when this injury is very slight. With instant and complete rupture of the cyst the toxic manifestations are fulminating and sometimes fatal. No toxic symptoms occur at the time of operation on hydatid because general anaesthesia abolishes the anaphylactic state, although this may supervene after the operation. The chronic condition of ill health called "hydatid diathesis" is probably of toxic origin. In diagnosis one of the commonest errors is to mistake a hydatid cyst for gall stones in cases of jaundice with hepatic enlargement. The author considers the prohibition of feeding infected material to dogs as the only feasible plan of ultimate prevention.

R. T. L.

DÉVÉ (F.). La cuticulisation des capsules proligères échinococciques. [**Cuticulization of Brood Capsules of Echinococcus.**]—*Ann. Parasit. Humaine et Comparée.* 1927. Oct. 1. Vol. 5. No. 4. pp. 310–328. With 8 text figs. [23 refs.]

Brood capsules cannot become transformed into echinococcus cysts. They take no part in the formation of secondary hydatids. Daughter cysts cannot be derived directly from the germinative layer of the mother cysts. The scolex is the exclusive source of the endogenous cyst of the first generation.

R. T. L.

COUTELEN (F.). Sur l'évolution vésiculaire *in vitro* des scolex échinococciques. [**The Vesicular Development in vitro of Echinococcic Scolices.**]—*Ann. Parasit. Humaine et Comparée.* 1927. July 1. Vol. 5. No. 3. pp. 239–242. With 2 figs. [2 refs.] [Faculty of Med., Paris.]

Continuing his earlier work on the development of hydatids *in vitro* the author has now made a histological study of the scolices thus developed. He finds all stages between the normal scolex and those markedly vesicular. The appearances are identical in fact with those described by DÉVÉ in his researches *in vivo* on secondary echinococcosis in man and domesticated animals.

R. T. L.

HARNETT (W. L.). **A Case of Hydatid Cyst of the Liver.**—*Indian Med. Gaz.* 1928. Jan. Vol. 63. No. 1. pp. 16–17. With 1 text fig.

This case occurred in a Hindu aged eight from the Mozufferpur district of Bihar. One year previously a hard round painless swelling about one inch in diameter was noticed in the epigastrium which gradually increased in size and became slightly tender. At the time of operation there was a globular swelling about 3 by 2½ inches extending downwards from the epigastrium for about four fingers breadth. The tumour was dull on palpation and gave no hydatid fremitus.

R. T. L.

CAMERON (W. M.). **A Case of Somatic Infection with** *Cysticercus cellulosae.*—*Jl. Roy. Army Med. Corps.* 1928. Feb. Vol. 50. No. 2. pp. 128–130.

Two cases of cysticercosis, apparently both acquired during residence in India, are recorded in this paper. In one there were no symptoms, the diagnosis was confirmed by excision of a cyst. In the other case there were cerebral symptoms—fits, with mental excitement, associated with general debility. Numerous small nodules about the size of a pea were freely movable under the skin, chiefly in the muscles of the arms and shoulders, but occurring also in all parts of the body. The eosinophilia amounted to 11 per cent. In neither case could an associated infection with *Taenia solium* be determined.

R. T. L.

RAMSDELL (Susan Griffith). **A Note on the Skin-Reaction in Taenia Infestation.**—*Jl. Parasit.* 1927. Dec. Vol. 14. No. 2. pp. 102–105. [5 refs.] [Univ. Health Service Lab., Univ. Texas.]

There is evidence of the occurrence of a skin sensitization and of an antitoxin production in *Taenia saginata* infection, but the skin reaction is not strictly specific and the toxins produced are not active as haemolysin or agglutinin.

R. T. L.

Rebello (Silvio), da Costa (S. F. Gomes) & Rico (J. Toscano). Réactions des cestodes étudiées par la méthode graphique (*Taenia serrata* et *Dipylidium caninum*). [**Reactions of Cestodes studied by the Graphic Method.**]—*C.R. Soc. Biol.* 1928. Feb. 17. Vol. 98. No. 6. pp. 470–473. With 2 text figs. [2 refs.] [Pharm. & Therap. Inst., Faculty of Med., Lisbon.]

In Rhode-Saito fluid kept at 38° C., pH 6·4, the segments of *Taenia serrata* and *Dipylidium caninum* retained their activity for 2 days. Isolated proglottids can be made to give interesting graphs showing their contractions and the effect thereon of anthelmintics.

R. T. L.

Brown (H. W.). **A Study of the Regularity of Egg-Production of** *Ascaris lumbricoides, Necator americanus* **and** *Trichuris trichiura.*—*Jl. Parasit.* 1927. Dec. Vol. 14. No. 2. pp. 110–119. [5 refs.] [School of Hyg., Johns Hopkins Univ., Baltimore, Md.]

Judging by a comparison of the coefficients of variation of the eggs and grams of faeces passed per day the egg production by *Necator americanus, Ascaris lumbricoides* and *Trichuris trichiura* is, within errors due to size of infestations, equally regular. Egg count data from hosts harbouring these worms give an index of the number of worms harboured and surveys of population groups give for *Ascaris lumbricoides* and *Trichuris trichiura* results as reliable as for *Necator americanus.*

R. T. L.

Brown (H. W.) & Cort (W. W.). **The Egg Production of** *Ascaris lumbricoides.*—*Jl. Parasit.* 1927. Dec. Vol. 14. No. 2. pp. 88–90. [6 refs.] [Sch. of Hyg., Johns Hopkins Univ., Baltimore, Md.]

A boy 5 years old passed approximately 10,064,000 ascaris eggs in a single day. After treatment 43 females and 24 males were obtained, giving about 234,000 eggs per day for each female. A boy, 13 years old, passed about 735,000 unfertilized eggs in three days and after treatment passed a single large female worm, giving thus an average daily output of about 245,000 eggs. In these two cases the eggs passed per gram weight of female adult averaged nearly 2,000. On examination of two large series of unpublished egg counts made by the China Hookworm Commission and the Hookworm Expedition to Panama, the authors conclude that the average egg production of ascaris cannot be very much lower than in these two cases. The figures indicate remarkable fecundity and an almost unbelievable wastage in view of the fact that the human ascaris has no hazards which accompany free larval stages or life in an intermediate host and has an egg shell which is unusually resistant to environmental conditions.

R. T. L.

Brown (Harold W.). **Studies on the Rate of Development and Viability of the Eggs of** *Ascaris lumbricoides* **and** *Trichuris trichiura* **under Field Conditions.**—*Jl. Parasit.* 1927. Sept. Vol. 14. No. 1. pp. 1–15. With 2 text figs. [19 refs.] [School of Hyg., Johns Hopkins Univ., Baltimore, Md.]

An analysis is made of some of the influences which affect the development and viability of eggs under different sets of conditions in nature.

This indicates that the type of soil is an important factor. Ascaris eggs developed to the motile embryo stage in 15 days while the eggs of the whipworm reached the same stage in 21 days. 100 per cent. of the eggs of both species underwent degeneration in sand exposed to the sun for a comparatively short time. In humus soil the development of cultures of Ascaris eggs was at least 20 days behind that in sand, clay and loam soils.

R. T. L.

Hiraishi (Teiichi). [**Pig Infection with the Ascarid Larvae. (A Supplementary Report).**]—*Keio-O Igaku (Jl. Kei-O Med. Soc.).* 1927. Jan. Vol. 7. No. 1. [Summarized in *Japan Med. World.* 1927. Aug. 15. Vol. 7. No. 8. pp. 243–244.]

A group of sucklings which had been fed upon a vitamin A deficient ration had a higher morbidity with ascariasis than those which had been fed on a ration containing cod liver oil. In vitamin A deficient animals the clinical symptoms developed early and ran a serious and prolonged course while in the others the symptoms were, if any, slight and of short duration. The pathological changes in the lungs also differed markedly.

R. T. L.

Hirasawa (Ichizo). [**Experimental Studies on the Per-Oral Infection with the Ascarid Larvae hatched in the Open Air, in Special Reference to the Processes of Development in the Bodies of the Proper Host or Alien Hosts.**]—*Tokyo Iji-Shinshi (Tokyo Med. News).* 1927. July. No. 2532. [Summarized in *Japan Med. World.* 1927. Nov. 15. Vol. 7. No. 11. pp. 332–333.]

After hatching in an artificial medium, the larvae of *Ascaris lumbricoides* remain alive for a considerable time but do not appear to develop, but *Belascaris marginata* larvae appear to grow a little. When administered by the mouth experimentally the infection follows in the same manner as when embryonated eggs are given.

R. T. L.

Alfeeva (S.). **On the Question of the Migration of Ascaris and Oxyuris into the Tissues of the Intestinal Tumor in Man.**—*Rev. Microbiol. et Epidémiol.* 1927. Vol. 6. No. 4. English summary p. 476. [In Russian pp. 423–432. Numerous refs.]

Evidence is given that ascaris and oxyuris can move actively through the living tissues of the gut wall making long sinuses in their progress.

R. T. L.

Leger (Marcel). L'ankylostomiase dans nos colonies de l'Afrique Occidentale Française. [**Ankylostomiasis in the Colonies of French West Africa.**]—*Rev. Prat. Malad. des Pays Chauds.* 1927. June. Vol. 7. No. 6. pp. 308–321. [35 refs.]

Leger has rightly thought it useful to summarize the somewhat scattered literature which deals with the incidence of hookworm in the West African Colonial Empire of France. He points out that hookworm is generally prevalent, but suggests further inquiry into: (*a*) relative proportion of the two species *N. americanus* and *A. duodenale*; and (*b*) the relative proportion of diseased persons and carriers.

R. T. L.

HILL (Rolla B.). **Hookworm Infestation in an Unsanitated District, after an Intensive Treatment Campaign.**—*Jl. Preventive Med.* 1927. Nov. Vol. 1. No. 8. pp. 537–545. With 1 text fig. [10 refs.] [Internat. Health Division, Rockefeller Foundation, New York.]

The considerable degree of reinfestation with hookworm, amounting in some cases to 20 per cent. of the original intensity within a year, indicates that treatment alone can do nothing more than temporarily alleviate the situation. In an unsanitated rural area in Porto Rico, the author treated 1,000 people intensively until the majority were cured. 98 per cent. of the people were originally positive, 73 per cent. became cured, but 81 per cent. were again positive during the following year.

R. T. L.

HEYDON (G. M.). **Observations on Conditions affecting Hookworm Ova and Larvae.**—*Med. Jl. Australia.* 1927. Nov. 5. 14th Year. Vol. 2. No. 19. pp. 640–645. [6 refs.] [Australian Inst. of Trop. Med., Townsville, Queensland.]

In this paper the author has studied the survival of hookworm eggs in the pans of latrines in use in many parts of Queensland. His observations on the action of urine, thought to be mainly responsible for the rapid destruction of ova in the pans, differ markedly from the findings of MAPLESTONE. Urine has a detrimental effect also on hatched larvae and on the sheathed infective forms. This action is due mainly to the ammonia formed on decomposition. *A. duodenale* ova and larvae are much more resistant than those of *N. americanus*. Even under the most favourable conditions of temperature and urine admixture the ova of *A. duodenale* often survive more than a week in Queensland privy pans.

R. T. L.

HEYDON (G. M.). **The Influence in Hookworm Infection of the Species of Worm and of the Race of Man and on the Characters of the Larvae as a Means of determining the Species Distribution.**—*Med. Jl. Australia.* 1927. Sept. 24. Supp. No. 7. pp. 206–208. [3 refs.] [Australian Inst. of Trop. Med., Townsville, Queensland.]

Heydon is surprised that little or no emphasis is placed on the fact that the two hookworm species are not of equal importance as producers of disease in man. Tolerance of infestation varies enormously with diet and the state of nutrition, with age, with the severity of physical labour and from unknown causes such as those classed as individual and racial susceptibility. At Townsville in Northern Queensland the cases of serious disease encountered so far have been caused by *A. duodenale*, although both species are common. Hitherto a worm count after treatment with anthelmintic has been the only method available for determining the species distribution. The author suggests that advantage could be taken of the differences between the mature larvae, which are striking and readily seen. The method is applicable to the examination of specimens of earth suspected of containing hookworm larvae as well as small faecal specimens. It is recognized that the larvae may be accompanied by numbers of free-living nematode larvae and by the larvae of hookworms of the cat and dog.

R. T. L.

GIGLIOLI (G.). **Report on Hookworm Survey carried out at Mackenzie and Akyma from July 1st to 11th, 1925.**—*British Guiana Med. Annual 1925.* pp. 34–36.

The examination of 100 specimens from common labourers has definitely proved that the repetition of a hookworm mass treatment is unnecessary as long as the importation of new infection is prevented by the treatment of all newcomers and the prevention, by a conservancy system, of soil pollution from the small residue of infected persons who have not been medically cured by carbon tetrachloride.

R. T. L.

MUKERJI (A. K.). **Physical Efficiency in Hookworm Infection. A Preliminary Report.**—*Indian Med. Gaz.* 1927. Oct. Vol. 62. No. 10. pp. 562–565. [13 refs.]

Mukerji has failed to demonstrate any loss of physical efficiency in light hookworm infections. From a study of prisoners by Schneider's cardio-vascular test, except in a few cases which may lie within normal variations, he was unable to detect any appreciable rise in the efficiency score after the expulsion of the worms.

R. T. L.

LANE (Clayton). **Migration of Hookworm Larvae from Cultures.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1928. Jan. 31. Vol. 21. No. 4. pp. 309–314. With 3 figs. (2 on plate). [2 refs.]

Continuing his valuable researches on the factors which determine whether hookworm ova shall develop into larvae and whether these shall grow to infective forms the author has devised ingenious experiments by which there is a control of single factors and in which an attempt has been made to secure uniformity in material and circumstance. The results strikingly support his contention that no importance can be attached to the conclusion that the number of larvae recovered by the soakage of a culture represents all, or practically all, the larvae which have developed in that culture. Indeed it appears practically certain that in hydraulic and other conditions which are favourable to migration the better nourished and the more vigorous the larvae the fewer remain behind in the culture for enumeration. Untrapped cultures can afford, then, no assured indication as to the viability of hookworm ova, the longevity of larvae in soil, or the degree of migration in soil. Our present knowledge on these important matters is based upon fallacious studies with untrapped cultures.

R. T. L.

YOKOGAWA (Sadamu). **Results of Comparative Studies on Oral and Cutaneous Infection of Dogs with** *Ancylostoma caninum.*—*Abhandl. a. d. Gebiet d. Auslandskunde. Hamburg. Univ.* 1927. Vol. 26. (D., Med. & Vet. Vol. 2.) [Festschrift NOCHT.] pp. 608–611.

Yokogawa affirms that the mature (encysted) larvae of the hookworm generally do not migrate in the natural host and that if any migration takes place in a natural host, such migration is to be looked upon simply as accidental and does not form a definite step in the scheme of the life history of the worm. Evidence from experiments on dogs is given to

prove that infection with hookworm can be more easily and heavily effected through the mouth than through the skin. 45·1–85·7 per cent. of the larvae given by the mouth were found in the intestine while only 4·7–36·9 per cent. of those applied to the skin reached the intestine. The author, however, does not wish it to be understood that these conclusions are immediately applicable to man. It should however, be borne in mind that hookworm infection can easily be established through the mouth.

R. T. L.

SCHWARTZ (Benjamin). **Description of *Ancylostoma pluridentatum*, a Hookworm of Carnivores, and a Review of the Genus Ancylostoma.** —*Proc. U.S. Nat. Museum.* 1927. Vol. 72. Art. 1. 9 pp. With 6 figs. [9 refs.]

Schwartz describes anew the anatomy of *Ancylostoma pluridentatum* and clears up certain doubts which led DARLING to the view that this species was probably identical with *A. braziliense*. A useful key indicating the relationships of the eight known species of the genus *Ancylostoma* is added. *A. caninum*, *A. conepati*, and *A. mucronatum* have three pairs of well developed ventral teeth. In *A. duodenale* the third pair is almost rudimentary. In *A. malayanum* and *A. mycetis* apparently only two pairs are present. In *A. pluridentatum* and *A. braziliense* there is one pair of well developed teeth and one pair of rudimentary. The author suggests that each species with less than three pairs of well developed teeth represents a mutation from the *A. caninum* type.

I. Three pairs of teeth in anterior ventral portion of buccal capsule; medio-lateral and postero-lateral rays divergent.
  1. Inner pair of teeth small or rudimentary ... ... *A. duodenale*
  2. Inner pair of teeth well developed :—
    A. Species inadequately described; from an edentate (*Dasypus gilvipes*) ... ... *A. mucronatum*
    B. Species adequately described: from carnivores.
      (*a*) Spicules 600–900 μ long ... ... *A. caninum*
      (*b*) Spicules 1·8–22 mm. long ... ... *A. conepati*

II. Two pairs of teeth in anterior ventral portion of buccal capsule; medio-lateral and postero-lateral rays close together and parallel.
  1. Inner pair of teeth small or rudimentary :
    A. Three pairs of small toothlike projections present on dorsal wall of buccal capsule ... ... *A. pluridentatum.*
    B. Toothlike projections not present on dorsal wall of buccal capsule ... ... *A. braziliense*
  2. Inner pair of teeth well developed :
    A. Species inadequately described; from a primate (*Mycetes coraya*) ... ... *A. mycetis*
    B. Species adequately described; from carnivores (*Ursidae*) *A. malayanum*

R. T. L.

VAN THIEL (P. H.). **Some Remarks in consequence of the Researches of Svensson and Kessel on Necator and Ancylostoma Larvae.**—*Jl. Parasit.* 1927. Dec. Vol. 14. No. 2. pp. 95–96. [7 refs.] [Inst. of Trop. Med., Leyden.]

Van Thiel refers to his early work (1924) differentiating the strongyloid larvae of the hookworms of man and of the dog and draws attention to the fact that the larvae originally described by him as those of *Ancylostoma*

caninum belong to *Uncinaria stenocephala*. In the latter as contrasted with the larvae of *A. duodenale* the tail is strikingly obtuse and the intestinal valves are not so obvious.

R. T. L.

Lamson (P. D.), Minot (A. S.) & Robbins (B. H.). **The Prevention and Treatment of Carbon Tetrachloride Intoxication.**—*Jl. Amer. Med. Assoc.* 1928. Feb. 4. Vol. 90. No. 5. pp. 345–349. [11 refs.] [Vanderbilt University School of Med., Nashville, Tenn.]

Doses of 2·5 to 3 cc. of carbon tetrachloride removes from 95–100 per cent. of *Necator americanus* and is only slightly less effective against *Ancylostoma duodenale*. Hundreds of thousands of cases have been treated since its introduction in 1921 by Dr. M. C. Hall. The number of fatalities from its use in hookworm disease has been extremely small. These have been thought to be due to impurities, but cases of intoxication have occurred with extremely pure carbon tetrachloride and it would appear from the experimental enquiry conducted by the authors that intoxication from carbon tetrachloride is due to one of four complications: (*a*) irritation or mechanical obstruction by ascarids which are stimulated to marked activity by this drug; (*b*) a chronic alcoholism—it is recommended that these patients should be refused treatment; (*c*) the presence of undigested food in the intestine, especially a fatty food.—Carbon tetrachloride should always be given on an empty stomach, and should not be followed by fatty foods for a considerable period; (*d*) calcium deficiency explains most of the accidents that have occurred in children and where the doses given were so small as to seem at first insufficient to cause death. There is a considerable latent period, varying from 24–36 hours, before the onset of symptoms of nausea and sometimes uncontrollable vomiting. When both the calcium ion and fibrinogen content of the blood are low intestinal haemorrhages may be uncontrollable. Inadequate calcium reserve is present in most normal individuals and children, but should be built up as a routine procedure in the poorly nourished by adding to the daily diet about one quart of milk or by prescribing calcium lactate, carbonate or chloride, although these are apt to cause gastric disturbance. About 3 gm. daily should be administered in divided doses for about one week before treatment. Ammonium chloride or hydrochloric acid by the mouth is also effective in making stored calcium available. These drugs may be given for the relief of symptoms, but should be stopped when signs of air hunger indicate that an undesirable degree of acidosis is being produced. Parathyroid extract has been used very successfully in raising the blood calcium in carbon tetrachloride intoxication. Subcutaneous injections are given at intervals of several hours.

It should be remarked that the experimental data upon which the authors have based their conclusions have been derived from studies on dogs.

R. T. L.

Solovieuf (N.). Sur le rôle d'Enterobius (Oxyuris) dans l'étiologie d'appendicites. [**The Role of Oxyuris in the Aetiology of Appendicitis.**]—*Rev. Microbiol. et Epidémiol.* 1927. Vol. 6. No. 3. French summary p. 373. [In Russian pp. 265–274. 11 refs.]

From 144 appendices the author obtained specimens of oxyuris in 46·53 per cent. Secondary infection through the damaged mucosa

may give rise to appendicitis. Oxyuris plays a more important rôle than trichocephalus since it occurs much more commonly in cases of appendicitis.

R. T. L.

Bachman (George W.). **A Precipitin Test in Experimental Trichiniasis.** —*Jl. Preventive Med.* 1928. Jan. Vol. 2. No. 1. pp. 35–48. [11 refs.] [Dept. of Hyg. & Bact., Univ. of Chicago.]

The failure of earlier workers to detect trichinella infection by serological methods was due to the fact that they used saline, alcohol and ether extracts as test-tube antigens instead of using the isolated parasite. In such tissue extracts the author failed also to detect precipitins. By freeing the larvae from infected muscle by artificial digestion and by hydrolysing the dried worm powder in 0·1 per cent. hydrochloric acid a satisfactory antigen was obtained. The acid solution could be used unmodified for artificial immunization of rabbits, and precipitins were detectable in high concentration 5 days after the last injection. After about the 40th day they began to diminish and disappeared about the 70th day. In rabbits infected with trichinosis by experimental feeding precipitins were not demonstrable until the 30th day, then increased until the 90th and still detectable after 227 days in 2 cases and 367 days in the third case. In the serum of a patient suffering from trichinosis precipitins were demonstrable in an antigen dilution of 1 in 3,500.

R. T. L.

Akagi (Katsuo). [**On a New Species of Rhabditis, occurring among the Ainos in Hokkaido.**]—*Chugai Iji-Shimpo* (*Internat. Med. News*). 1927. Mar. No. 1121. [Summarized in *Japan Med. World.* 1927. July 15. Vol. 7. No. 7. pp. 213–214.]

In 2 out of 82 individuals of the Aino race in Hokkaido, Japan, the author discovered specimens of Rhabditis which are morphologically quite different from other species of this genus which have been described as parasites of man. The author, however, is not clear whether the infections observed by himself were generally parasitic or results of soil contamination.

R. T. L.

i. Cool (P.). Filariasis in de Molukken. [**Filariasis in the Moluccas.**] —*Geneesk. Tijdschr. v. Nederl.-Indië.* 1927. Vol. 67. No. 2. pp. 314–315.

ii. Schijveschuurder (W.). Over het voorkomen van filariasis op Ceram. [**The Distribution of Filariasis in Ceram.**]—*Ibid.* pp. 316–317.

iii. Erber (M.). Bijdrage tot het onderzoek inzake de verspreiding der *Filaria bancrofti* in Celebes. [**The Distribution of *Filaria bancrofti* in Celebes.**]—*Ibid.* pp. 318–322. With 1 map.

iv. Lichtenstein (A.). Filaria-onderzoek te Bireuën. [**Filaria Research at Bireuën (Atchin).**]—*Ibid.* No. 5. pp. 742–749. [6 refs.]

v. Brug (S. L.). Een nieuwe Filaria-soort (*Filaria malayi*), parasiteerende bij den mensch (voorloopige mededeeling). [**A New Filaria Species** (*Filaria malayi*) **parasitizing Man** (**Preliminary Communication**).]—*Ibid.* pp. 750–754. With 6 figs. on 1 plate. [4 refs.]

i. Cool reports upon the distribution of filariasis in the Moluccas. The disease is more or less prevalent on West and North New Guinea (about South N.G. no data are available yet), on the Soela Islands, North Ceram, the South Western and Tenimber Islands. The reports are so far scanty and give only an incomplete idea of the distribution of the disease ; further investigation is desirable and possible if medical officers keep notes of it on their regular surveys. The findings largely concern the occurrence of elephantiasis, but in other instances blood samples taken at random showed the presence of the microfilaria of *F. bancrofti* in 10–25 per cent.

ii. On West Ceram (population about 30,000) no filariasis was seen by the author. In the adjacent district of Wahai however, elephantiasis of the legs was noticed in 3 villages near the coast, in 4 out of 300, in 27 out of 130 and in 3 out of 80 inhabitants, respectively. In 25 per cent of these a microfilaria was present in the blood, said to be *M. bancrofti*.

iii. Using Barto's concentration method, improved by Haga [this *Bulletin*, Vol. 21, p. 564], for samples taken in daytime, and ordinary thick drops (made from measured quantities of blood) for samples taken at night, a quantitative comparison was made between the number of larvae found in the blood at 11 a.m. and at 11 p.m. in 30 carriers of the worm. The average showed the presence of one microfilaria in the morning against ten at night. The method Barto-Haga never failed to show the larvae in daytime, if present at all. Encouraged by this result the author restricted his research to samples taken in the villages in daytime and examined at night.

In the district of Mamoedjoe (W. Celebes) the percentage of carriers was found to vary from 7·5–52·9 per cent. (average 24·9). The most heavily infected part of the district was a strip along the coast and rivers. The mountain villages were free. As regards the transmission of the disease Erber remarks that *Aëdes amesi*, a mosquito rare elsewhere and fairly common in this district, may play a part. The prevalence of elephantiasis is more or less an indicator of the distribution of filaria. Acute filarial diseases (lymphangitis with fever) were not commonly seen. The occurrence of fever attacks as such is not necessarily related to filariasis since malaria shows approximately the same distribution.

iv. The prevalence of filariasis in Atchin is well known from previous reports. Lichtenstein confirmed their opinion. His attempts to infect the various Culicines, found at Bireuën (*C. fatigans, C. sitiens, C. gelidus, C. vishnui, C. bitaeniorhynchus, C. whitmorei, Aëdes fasciatus, A. albopictus,* and *Mansonioides uniformis*) yielded only negative results, though 320 mosquitoes were examined. The clinical manifestations of filariasis in Atchin differ from the usual. No acute filarial diseases are seen. Elephantiasis is common, but is always restricted to the lower leg. The clinical sufferers from elephantiasis were never found to harbour the larvae. The distribution of filariasis in the district of Bireuën is an irregular one, which is shown by some figures.

The facts mentioned suggested to the author that the filaria of Bireuën, though showing a typical nocturnal life cycle, might represent a separate species, to be distinguished from *F. bancrofti*.

v. Brug examined the thick drop samples sent by LICHTENSTEIN and actually found a microfilaria, which is to be distinguished from *M. bancrofti*. The difference from the latter (apart from the impossibility of development in *C. fatigans* and many other Culicines) are ; (1) the presence of 2 (or 3) scattered nuclei in the point of the tail ; and (2) a more forward situation of the anal pore. The adult worm was not examined because much objection exists to post-mortem examinations at Bireuën. Brug proposes the name *Filaria malayi*.

W. J. Bais.

O'CONNOR (F. W.). **Filariasis in Association with Infection of** *Filaria bancrofti*.—*Porto Rico Rev. of Pub. Health & Trop. Med.* 1927. Dec. Vol. 3. No. 6. pp. 211–222.

In Porto Rico 8·9 per cent. of 45 specimens of *Culex fatigans* were found infected with filarial larvae in the boys' dormitory of one of the schools in San Juan, P. R. Attacks of lymphangitis show a periodicity for each individual. The condition usually lasts for 3 to 7 days but in each patient the duration is fairly constant. In 14 cases of hydrocele microfilariae could not be found in the fluid even after centrifugation. In view of the failure up to the present of treatment by intravenous, subcutaneous and intramuscular injections the author suggests an attempt to kill the adult worms by subcutaneous or deep injection below the areas where attacks of lymphangitis are known to begin. He actually mentions tartar emetic in this connexion as possibly more efficacious than by intravenous injection. The second suggestion is careful surgical exploration where local symptoms definitely indicate the position of the adult worm.

R. T. L.

SHARP (N. A. Dyce). **Filariasis in the Cameroon, with Special Reference to Skin Infections by Microfilariae.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1928. Feb. 25. Vol. 21. No. 5. pp. 413–416.

In the Mamfe division of the Cameroons *Filaria bancrofti* is absent or nearly so, but *Loa loa, Filaria perstans, Onchocerca volvulus* and *Agamofilaria streptocerca* are exceedingly prevalent. *A. streptocerca* embryos occurred in about 40 per cent. of the men and women examined ; *O. volvulus* embryos in over 95 per cent. The rate of 6 per cent. given for *Loa loa* refers to 50 cases examined at 9 p.m.

R. T. L.

SHARP (N. A. Dyce). **A Note on** *Agamofilaria streptocerca* **Macfie and Corson, 1922.**—*Ann. Trop. Med. & Parasit.* 1927. Dec. 31. Vol. 21. No. 4. pp. 415–417. [1 ref.]

Dyce Sharp puts forward three arguments against the view recently expressed in MANSON-BAHR'S edition of Manson's Tropical Diseases (1925) that the *Agamofilaria streptocerca* of MACFIE and CORSON 1922, is identical with the embryo of *Onchocerca volvulus*. Not only are the worms morphologically dissimilar, but *S. damnosum*, the vector of *O. volvulus*, is not an efficient vector of *A. streptocerca*.

R. T. L.

SHARP (N. A. Dyce). *Filaria perstans ;* **its Development in** *Culicoides austeni.*—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1928. Feb. 25. Vol. 21. No. 5. pp. 371–396. With 5 text figs, 4 figs. on 1 plate & 1 chart. [38 refs.]

A more formal and detailed description is given of the development of *Filaria perstans* in *Culicoides austeni* briefly announced by Dyce Sharp in 1927 [see this *Bulletin*, Vol. 24, p. 995]. In the Cameroons the incidence of *F. perstans* is not less than 92 per cent. The rarity of infection in white men is due probably to the use of the mosquito net and to the objection of the vector to light. The author's work inculpates *Culicoides grahami* as well as *C. austeni* (with which the bulk of the experimental work was done). Only the female bites and darkness is essential. A lamp giving a quarter of a candlepower of light when placed inside a tent 7 feet long would keep culicoides away. Full moon gave almost complete protection. Black skin proved much more attractive than white. The day to day metamorphosis in the fly is described. The infective larvae emerge from the proboscis on the 7th or 8th day. With experimental feeding 4 to 7 worms usually developed. Of the wild flies at Mamfe over 7 per cent. were infected.

R. T. L.

CARO (Jean). Au sujet de deux cas d'oedèmes de Calabar. [**Two Cases of Calabar Swelling.**]—*Bull. Soc. Path. Exot.* 1927. Dec. 14. Vol. 20. No. 10. pp. 977–979. [Pasteur Inst., Paris.]

The clinical records of two cases are cited in support of the author's contention that the occurrence of Calabar swellings is not definitely correlated either with the migration through the tissues of the adult *Loa loa* or with the discharge of *loa* embryos. He suggests that some toxin or faecal excretion of the worm may be responsible.

R. T. L.

YANO (Ataru). **Findings in the Kidney of the Dog infested with** *Filaria immitis* **and Experimental Studies on the Toxic Substance of** *Filaria immitis*, **Microfilaria and the Egg. Parts I, II and III.**—*Japan Med. World.* 1927. Sept. 15. Oct. 15 & Nov. 15. Vol. 7. Nos. 9, 10 & 11. pp. 263–266 ; 292–296 ; 324–327.

The author is convinced that the entire changes observed in the kidney in infection of dogs with *Filaria immitis* are caused primarily by the toxin circulating through the blood stream. No local or general eosinophilia was observed, although numerous focal infiltrations were found composed of many plasma cells. Clear centrifuged extract of microfilarias in salt solution produced no pathological change in the kidney of mice, but a corresponding extract of adult females induced distinct changes which resemble very closely the changes found in the kidney of filariated dogs.

R. T. L.

SHARP (N. A. Dyce). **A New Site for** *Onchocerca volvulus.*— *Lancet.* 1927. Dec. 17. p. 1290.

In a case with an ulcerated foot, resembling a Lisfranc amputation, which had suppurated for months the hospital dresser extracted piecemeal several inches of a female nematode worm which proved on micro-

scopical examination to be *O. volvulus*. The site occupied would have been in the normal foot below the second and third metatarsal in the fibres of the flexor brevis digitorum.

R. T. L.

Heydon (G. M.). **Observations on the Larvae of *Onchocerca gibsoni* (Cleland and Johnston) in the Skin of Infected Cattle.**—*Australian Jl. Experim. Biol. & Med. Sci.* 1927. June 16. Vol. 4. Pt. 2. pp. 61–68. With 1 plate. [10 refs.] [Australian Inst. Trop. Med., Townsville.]

Heydon records the presence of the larvae of Onchocerca in the superficial layers of the dermis in Queensland cattle having nodules of *Onchocerca gibsoni* in the brisket, the number varying from 15–40 per square millimetre of skin.

R. T. L.

Ochoterena (I.). [**Mexican Onchocerciasis.**]—*Rev. Mexicana de Biol.* Mexico City. 1927. May-June. Vol. 7. p. 55. [Summarized in *Jl. Amer. Med. Assoc.* 1927. Sept. 17. Vol. 89. No. 12. p. 1007.]

The tumours caused in Mexico by onchocerca are well illustrated. There is nothing, in the opinion of the author, to justify the creation of a new species. They vary according to growth location.

R. T. L.

Hofstötter (Herbert). Ein weiterer Fall von *Ascaris lumbricoides* in einem Eileiter.—*Wien. Klin. Woch.* 1927. July 7. Vol. 40. No. 27. pp. 878–879. [20 refs.]

Joyeux (Ch.) & Kobozieff (N. I.). Recherches sur l'*Hymenolepis microstoma* (Dujardin, 1845).—*Ann. Parasit. Humaine et Comparée.* 1928. Jan. 1. Vol. 6. No. 1. pp. 59–79. With 7 text figs. [30 refs.] [Lab. Parasit., Faculty of Med., Paris.]

Joyeux (Ch.). La classification des cestodes d'après quelques travaux récents.—*Ann. Parasit. Humaine et Comparée.* 1928. Jan. 1. Vol. 6. No. 1. pp. 132–136. [7 refs.] [Lab. Parasit., Faculty of Med., Paris.]

Mazza (Salvador). La anquilostomiasis en las provincias del norte argentino.—*Prensa Méd. Argentina.* 1927. Sept. 30. Vol. 14. No.12. pp. 491–492. [3 refs.] [Also in *Bol. Inst. Clin. Quirúrg.* Buenos Aires. 1927. Vol. 3. No. 21–25. pp. 184–186.]

Walker (J. H. C.). *Ascaris lumbricoides* in the Singapore Garrison.—*Malayan Med. Jl.* 1927. Dec. Vol. 2. No. 4. pp. 148–150.

TROPICAL OPHTHALMOLOGY:

A REVIEW OF RECENT ARTICLES.—IX.*

THE EYELIDS.—MACRAE[1] has described an operation for entropion which he, at all events, considers superior to all others. WEBSTER taught him the technique in Beyrout. He employs general anaesthesia, and, after clamping the lid, makes an incision on its conjunctival surface parallel to and 3 mm. distant from the lid edge. The incision is carried right through the entire depth of the tarsal plate. Each extremity curves towards the lid margin, but does not actually reach it. The clamp is removed and a moist pad is pressed into the incision to stop the bleeding. A mucous membrane graft is taken from the lip, and this is pressed into the incision once the oozing of blood has ceased. Care must be taken to trim the ends of the graft to a point and to press them well down into the extremities of the wound. No sutures are employed. It is claimed that the operation gives satisfactory results and is followed by no deformity of the lid edge.

CONJUNCTIVA.—PASCHEFF[2] states that whilst both conjunctivitis necroticans infectiosa and conjunctivitis tularensis cause white spots in the conjunctiva, the causative organism is different. Conjunctivitis necrotica infectiosa is a nodular infectious disease with a tendency to suppuration. The spots are distributed all over the membrane, but are most numerous in the fornices. Conjunctivitis tularensis is accompanied by marked constitutional symptoms and causes caseation in the lymphatic glands; the spots in this disease principally affect the tarsal conjunctiva.

DURAND & LUMBROSO[3] argue that Koch-Weeks inflammation of the conjunctiva, especially in trachomatous countries, is by no means so innocuous a disease as is often supposed. The affection may not only in some cases produce a destructive corneal ulceration, but it predisposes to trachoma. Preventive vaccination should, therefore, prove of service. They have prepared a polyvalent vaccine of the bacillus and have experimented with it on school-children. The vaccine had no bad effects of any kind; and only 9·3 per cent. of the vaccinated children were found to harbour the Koch-Weeks bacillus as against 30 per cent. of the unvaccinated.

Spring Catarrh. Narayana RAO[4] reports from Mysore seven cases of spring catarrh, and concludes that (1) cases are fairly common in the district, (2) adolescent males are the most commonly affected, (3) caustics and operative treatment seem to do no good; but calcium salts and nuclein are useful. Most of his patients showed morbid conditions of the nose and throat, treatment of which seemed to benefit the ocular trouble. Blood examination revealed an eosinophilia in

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* For the eighth of this series see Vol. 24, pp. 1011–1021.

1 MACRAE (Alex). Webster's Operation for Entropion of the Upper Lid.—*Brit. Jl. Ophthalm.* 1928. Jan. Vol. 12. No. 1. pp. 25–30. [10 refs.]

2 PASCHEFF (C.). Differential Diagnosis between Conjunctivitis Necroticans Infectiosa and Conjunctivitis Tularensis.—*Amer. Jl. Ophthalm.* 1927. Oct. Vol. 10. No. 10. pp. 737–744. With 7 text figs. [11 refs.]

3 DURAND (Paul) & LUMBROSO (Ugo). Essai pratique de vaccination contre la conjonctivite aiguë à bacilles de Weeks.—*Arch. Inst. Pasteur de Tunis.* 1927. Dec. Vol. 16. No. 4. pp. 365–377. [1 ref.]

4 RAO (B. K. Narayana). Conjunctivitis Vernalis or Spring Catarrh of the Conjunctiva. A Study of Seven Cases.—*Indian Med. Gaz.* 1928. Jan. Vol. 63. No. 1. pp. 10–13. [10 refs.]

all the patients. The paper serves a useful purpose as it directs attention to a disease which may be wrongly diagnosed as trachoma by those who have not closely studied diseases of the eye. Applications of irritant, caustic solutions to the conjunctiva may then aggravate the disease and have a disastrous result.

Ibrahim[5] (Fahim Girgis) found that the eosinophilia present in patients suffering from constitutional disorders such as ankylostomiasis causes no excess of eosinophiles in their conjunctival discharges provided they are free from spring catarrh. The presence of eosinophile leucocytes in smears taken from the conjunctiva is therefore a valuable diagnostic aid; care must be taken, however, to obtain the smear quite free from any blood.

Lumbroso[6] divides those forms of conjunctivitis associated with follicle formation into two groups: (1) The typical forms such as trachoma, follicular, and the natural granular conjunctival inflammation of rabbits and monkeys; and (2) the atypical forms such as swimming-bath conjunctivitis, inclusion conjunctivitis of the newborn, Parinaud's conjunctivitis, and epithelial desquamative conjunctivitis. He considers that nearly all the typical granular inflammations, especially the more follicular, have a telluric origin. Agriculturists, infants (whose habits of crawling, etc., bring them in contact with the earth), and rabbits are all liable to be affected. After a long period of incubation and after many passages through different subjects the virus may become more active.

Trachoma.—Noguchi[7] has furnished further details regarding the isolation of a pathogenic micro-organism from the conjunctiva of trachomatous Albuquerque Indians and has furnished micro-photographs of the lesions produced in the conjunctiva of the inoculated monkeys. His first report has already been referred to[8] (this *Bulletin*, Vol. 24, p. 1013). The organism grew only on the leptospira medium. It is noteworthy that a pure culture was necessary to induce the disease and that crushed infected conjunctival tissue failed to do so. Noguchi states "Whether or not the parasite is related to forms of trachoma other than that occurring in American Indians remains, of course, to be determined by isolation of the micro-organism from cases in other localities, and possibly also by serologic examination."

In discussing the nature and cause of trachoma Nicolle[9] remarks on the difficulties connected with the investigation of the disease. Such animals as are suitable for experiment may react by a granular form of ophthalmia to many different varieties of irritant. And they may exhibit no characteristic lesion whilst actually harbouring its virus. He has come to the conclusion that trachoma is not a specific

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5 Ibrahim (Fahim Girgis). A Few Hints on Spring Catarrh.—*Bull. Ophthalm. Soc. Egypt.* 1927. Vol. 20. Session 24. pp. 74–78.

6 Lumbroso (Ugo). Relation de certaines conjonctivites granuleuses humaines avec la conjonctivite granuleuse naturelle du lapin.—*Arch. Inst. Pasteur de Tunis.* 1927. Dec. Vol. 16. No. 4. pp. 385–390. [1 ref.]

7 Noguchi (Hideyo). Experimental Production of a Trachoma-like Condition in Monkeys by Means of a Micro-Organism isolated from American Indian Trachoma.—*Jl. Amer. Med. Assoc.* 1927. Sept. 3. Vol. 89. No. 10. pp. 739–742. With 6 text figs. [Rockefeller Inst. Med. Research, New York.]

8 Noguchi (Hideyo). Experimental Studies of Trachoma. [Abstract.] *Bull. New York Acad. Med.* 1927. June. Vol. 3. No. 6. pp. 395–399.

9 Nicolle (Charles). Le trachome et les conjonctivites granuleuses. Leur nature. Leur origine.—*Arch. Inst. Pasteur de Tunis.* 1927. Dec. Vol. 16. No. 4. pp. 378–384.

disease of a peculiar type, but is the most disseminated, the most serious, and the best defined clinically of a very numerous group of diseases—the granular inflammations of the conjunctiva. [Many observers in the tropics have already formed a soemwhat similar opinion.] He suggests that the soil is the original source of the contagion, and he hopes that the disease may gradually disappear as hygiene improves.

Trapezontzewa's article[10] shows how extraordinarily deceptive the products of cell degeneration may prove in causing cell-inclusions which may easily be mistaken for micro-organisms. Various forms, the result of ingestion of eosinophile leucocytes and other cells, and of degenerative changes in mucus forming cells, may be found in smears taken from the conjunctiva of the normal rabbit. She describes the changes often found in trachoma when tiny granules, staining red or reddish-violet with Giemsa, appear in the protoplasm of a cell. These granules multiply until the cell becomes swollen and distended. The nucleus, still healthy, is surrounded by a granular mass from which it is separated by a thin layer of blue staining protoplasm. The nucleus eventually degenerates and cell disintegration becomes complete. She has succeeded in producing experimentally almost precisely the same changes in conjunctival epithelium taken from a healthy rabbit. A strip of conjunctiva, taken from a healthy rabbit, was incubated in normal saline solution. No aseptic precautions were observed in order that bacteria of low virulence, normal inhabitants of a rabbit's conjunctiva, might be encouraged to develop. The changes described as peculiar to trachoma occurred in the conjunctival epithelium as soon as the bacteria had had time to multiply. The author is convinced that the degenerative changes found in trachomatous conjunctival epithelium are secondary and are due to the direct action of a virus which is fixed in the adenoid layer of the membrane.

Rodriguez[11] advocates a more radical control of the disease in the Philippine Islands than that at present existing. Clinics should be held in every municipality at some time during the school year. McMullen's instructions should be distributed gratis to all public institutions. And careful surveys should be made of the different classes in districts which are known to be trachomatous. Howard[12] estimates the incidence of trachoma as 20 per cent. in South China and 30 per cent. in North China. He thinks the disease in China has now reached its "saturation point," and that in future, with increased knowledge and with improved hygiene, the prevalence of the disease should diminish gradually. Dust is indirectly responsible for infection since it leads to rubbing of the eyes by fingers which may be infected. He blames "the common towel" for the transmission of the disease. Dissemination of the disease will practically cease once this household article is abolished. In China spontaneous cure often occurs in the early cases, and the virulence of the disease is said to be relatively less than

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10 Trapezontzewa (C.). Des inclusions intracellulaires de l'epithélium conjonctival particulièrement dans le trachome. Quelques réflexions sur leur origine et leur nature.—*Arch. Inst. Pasteur de Tunis.* 1927. Sept. Vol. 16. No. 3. pp. 271–285. With 9 coloured figs. on 1 plate.

11 Rodriguez (Pedro A.). Trachoma Control among the School Children.—*Monthly Bull. Philippine Health Service.* 1927. Feb. Vol. 7. No. 2. pp. 60–67. [6 refs.]

12 Howard (Harvey J.). Community Control of Trachoma in China.—*China Med. Jl.* 1927. Sept. Vol. 41. No. 9. pp. 765–769.

in Europe or America. Rubbing with perchloride of mercury solution and boric acid is the treatment recommended. But the author states "marvellously beneficial results are brought about by treatment, even in the simplest forms, *e.g.*, hot water compresses without any other treatment." China is now receptive to propaganda, and skilful use of this would soon cause the disease to diminish. Chan & Oldt[13] remark that "too often the incidence rate of trachoma in China [and elsewhere] has been greatly exaggerated because folliculosis and follicular conjunctivitis were called trachoma." A careful examination of 1,602 persons attending a child welfare exhibition at the Y.M C.A. in Canton indicates a rate of about 15 per cent. of all those examined and about 38 per cent. amongst those affected by eye disease. The writers conclude that (1) the incidence rate in Canton is not over 15 per cent; (2) the importance of correct diagnosis cannot be too strongly emphasized; (3) every endeavour should be made to eradicate trachoma from the schools.

De Peyrelongue[14] has made observations on the disease in Syria. He found it very prevalent but hardly so much so as in Egypt. The florid type of trachoma was noted in 65 per cent. of the cases and the cicatricial type in 25 per cent. Severe outbreaks with secondary infections occur during the hot season. Lack of attention to sanitation is the chief factor in the spread of the disease; and the hot, arid, and windy regions are those most affected. The writer found a tendency to apply too strong caustics when treating the conjunctiva; excessive scarring is a consequence. Said[15] has much the same report to make. He found the disease common in young children. Defective hygiene and the associated plague of flies are factors in dissemination. The itinerant quack seems to be as mischievous as in other parts of the Orient; he is responsible for blindness due to lagophthalmos following ill-devised operations for entropion and trichiasis. Zachert[16] has examined 920 school-children in Tunis and the neighbouring district and found cicatricial changes in the conjunctiva in 37·2 per cent. and complicated trachoma in about 9 per cent. Comparing the disease as seen in Poland with that in Tunis he concludes that in the latter locality (1) it occurs at an earlier age; (2) its development is more rapid and destructive; and (3) the infective agent is much more virulent. He observed many trachomatous children in the clinics who had lost their sight from leucomata or staphylomata. But he adds the important fact that these complications were caused by secondary infections, such as the Koch-Weeks bacillus and Neisser's diplococcus, which are so common in Tunis. The discussion between Kopstein and Bobbert regarding the prevalence of trachoma in the Dutch East Indies has led Bakker[17]

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13 Chan (Y. P.) & Oldt (Frank). Observations on the Findings in 1,602 Eye Examinations for Trachoma.—*China Med. Jl.* 1927. Dec. Vol. 41. No. 12. pp. 992–998. [2 refs.]

14 de Peyrelongue. Fréquence, formes cliniques, facteurs étiologiques et distribution géographique du trachome en Syrie et au Liban.—*Rev. Internat. du Trachome.* 1927. Oct. Vol. 4. No. 4. pp. 107–122. With 1 map & 1 chart in text.

15 Said (Riza). Le trachome en Syrie.—*Rev. Prat. Malad. des Pays Chauds.* 1927. Nov. Year 6. Vol. 7. No. 11. pp. 547–549.

16 Zachert (M.). Le trachome en Tunisie.—*Arch. Inst. Pasteur de Tunis.* 1927. Dec. Vol. 16. No. 4. pp. 391–396.

17 Bakker (C.). Report of an Investigation with Regard to the Eye-Diseases in Amboina.—*Meded. Dienst d. Volksgezondheid in Nederl.-Indië.* 1927. Part 3. pp. 403–456. With 34 curves & 2 maps on 1 plate.

to investigate the question. He found that though trachoma does exist, chiefly amongst adults living under bad hygienic conditions, yet a benign affection of the conjunctiva which resembles follicular trachoma is far more common. This condition is especially prevalent amongst children and requires no isolation, and but little treatment since it tends to undergo a spontaneous cure. He says "In practice the diagnosis trachoma is trifled with so peculiarly, nay, almost criminally, that a warning word is not superfluous."

Viswalingam[18] thinks that the incidence of eye diseases in Malaya is increasing with the changing conditions of the country. Immigrants bring their diseases with them and infect the community. Ignorance and poverty lead to a resort to quacks and to delay in seeking treatment.

Galal Aboul Seoud[19] has remarked upon the comparative freedom from trachoma enjoyed by the native population of Mecca. People from Nejd, however, who are at present in occupation of the city, are badly affected. The same writer[20] thinks that cases of typical trachoma affecting only one eye are not uncommon in Egypt. Ptosis is a constant and early sign, and the follicles are found if the fornix is fully exposed. Tarsal changes and recurrent ulcers of the cornea may occur later in the disease.

Dusseldorp (Marcelo)[21] finds that the Provinces of Santiago del Estero, Tucuman, Salta, and Jujuy are heavily infected with trachoma. 70 per cent. of the cases, however, are mild. The disease is most prevalent in the industrial areas, and its spread is favoured by the bad hygienic conditions which exist.

Diagnosis of Trachoma. Canis[22] describes changes at the upper part of the limbus which he thinks are pathognomonic of trachoma. Small yellowish white beads, 1 mm. in diameter, form in a vascularized area at the limbus. The central portion of the bead becomes transparent and the lower portion of the little cup thus formed disappears, so that a regular series of arches arises. The area narrows to a crescentic scalloped edge of opacity. The sites of the beads are marked by small depressions. The author is so convinced of the value of this sign that he makes the rather doubtful statement: "It is more easy and more certain to make the diagnosis of trachoma by examining the limbus than by everting the upper lid." Unfortunately, too often, the diagnosis of trachoma is no simple matter. The greater the experience of the surgeon the less dogmatic on the subject is he likely to be.

Treatment of Trachoma. Worms (G.) & Bidault (R.)[23] report encouraging results from the use of diathermy. They find it necessary

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18 Viswalingam (A.). Neglect of Common Diseases of the Eyes. Their Results and Treatment.—*Malayan Med. Jl.* 1927. Sept. Vol. 2. No. 3. pp. 93–95.

19 Galal Aboul Seoud. Four Weeks Ophthalmic Work in Mecca.—*Bull. Ophthalm. Soc. Egypt.* 1927. Vol. 20. Session 24. pp. 201–202.

20 Galal Aboul Seoud. Some Clinical Observations on Monocular Trachoma. —*Bull. Ophthalm. Soc. Egypt.* 1927. Vol. 20. Session 24. pp. 79–81.

21 Dusseldorp (Marcelo). El tracoma en el norte.—*Bol. Inst. Clin. Quirúrg.* Buenos Aires. 1927. Vol. 3. Nos. 21–25. pp. 253–288. With 2 text figs., 5 graphs and 1 map.

22 Canis (J.). Les signes cornéens limbiques du trachome.—*Arch. Méd. et Pharm. Milit.* 1928. Jan. Vol. 88. No. 1. pp. 153–156. With 6 text figs. [1 ref.]

23 Worms (G.) & Bidault (R.). Le traitement du trachome par la diathermie. —*Rev. Internat. du Trachome.* 1927. Oct. Vol. 4. No. 4. pp. 122–127.

to induce a very thorough anaesthesia. The electrode is applied for one or two seconds and then reapplied at another point. Altogether 10 or 12 applications are made at a sitting. Intervals of 6 or 8 days are left between the treatments. But still longer intervals are necessary if the reaction set up is at all severe. KALLOCH[24] also reports favourable results from the same form of treatment. He pays special attention to the area in the retro-tarsal fold near the caruncle. The cases he treated seem to have been mostly children and young adults who suffered from the follicular variety of the disease.

CORNEA.—*Keratomalacia.*—HSU[25] records ten cases of keratomalacia which occurred in Pekin. The patients presented the usual signs of malnutrition, and some of them suffered from rickets. The author draws the attention of physicians practising in China to the important fact that the diet of nursing mothers, infants, and young children may often be deficient in vitamins. Blood transfusion was employed in the treatment of two of the cases. It seemed to do good, though one of the patients died. SEALE[26] reports a case he saw at Grahamstown. The patient was a Kaffir girl aged 8, and was apparently suffering from enteric. Only one eye was affected, and cod liver-oil treatment caused a rapid improvement, both ocular and constitutional. SEALE believes the disease to be uncommon in South Africa.

SOUDAKOFF[27] investigated the question of *tattooing leukomata of the cornea* with gold chloride after KNAPP'S method. The drug has an acid reaction, and, if used in solutions stronger than 5 per cent., must be carefully neutralized with an alkali. The stain may be darkened by using a reducer such as tannin. The procedure excites but little reaction and is aseptic. The cosmetic results in the cases quoted do not appear to have been better, or as good, as might have been obtained with Indian ink.

LACHRYMAL SAC.—MAGHRABY[28] (Abdel Maksoud) states that he has had success in the treatment of *chronic dacryocystitis* by daily injections of liquid paraffin followed by massage. Dilatation of the ducts by probing is commenced once the sac contents have become clear—normally between the 4th and 7th day. The paraffin soothes and lubricates the wall of the sac, and also has a beneficial action on the nasal mucosa.

LENS.—*Cataract.*—The report by DAVENPORT[29] is interesting to surgeons in the tropics as it deals with the after results of the operations

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24 KALLOCH (Dudley C.). Treatment of Trachoma by Surgical Diathermy. Preliminary Report.—*Jl. Amer. Med. Assoc.* 1927. Oct. 29. Vol. 89. No. 18. pp. 1511–1513. [Physiotherap. Dept., Near East Relief, Leninakan, Armenia.]

25 HSU (Kang-Liang). Nutritional Keratomalacia. Report of Cases.—*China Med. Jl.* 1927. Oct. Vol. 41. No. 10. pp. 825–836. With 7 figs. & 3 charts. [14 refs.]

26 SEALE (E. A.). A Case of Keratomalacia.—*Jl. Med. Assoc. South Africa.* 1927. Sept. 24. Vol. 1. No. 18. p. 479. [8 refs.]

27 SOUDAKOFF (P. S.). P. Knapp's Method of Tattooing the Cornea.—*China Med. Jl.* 1927. Aug. Vol. 41. No. 8. pp. 723–728. [10 refs.] [Peking Union Med. College, Peking.]

28 MAGHRABY (Abdel Maksoud). Treatment of Chronic Dacryocystitis with Paraffin Injection.—*Bull. Ophthalm. Soc. Egypt.* 1927. Vol. 20. Session 24. pp. 140–141.

29 DAVENPORT (R. C.). The After Results of Cataract Extraction.—*Brit. Jl. Ophthalm.* 1928. Feb. Vol. 12. No. 2. pp. 85–93. [2 refs.]

for senile cataract performed in Moorfields Hospital during the seven years 1919–1925. The average number of operations in a year was 366, and the results of 2,368 in all are analysed. Extraction with peripheral iridectomy was the operation most often performed. Simple extraction was done in 25 per cent. of the cases, but was less frequently employed in the later years. 872 of the patients were between the ages of sixty and seventy, and 580 were between seventy and eighty. Thus more than 60 per cent. were over the age of sixty. 88·4 per cent. obtained a vision of 6-60 or better, whilst 2·5 per cent. were complete failures, and 50 eyes required removal. Suppuration occurred in 20 patients and expulsive haemorrhage in 7 (0·3 per cent.). Iris prolapse occurred in 6·88 per cent. Of these 4·52 per cent. followed complete iridectomy, 5·65 per cent. peripheral iridectomy, and 12·8 per cent. simple extraction. Vitreous loss was recorded in 4·2 per cent. Four cases of sympathetic ophthalmitis were encountered. Needling for after cataract was done on 62·4 per cent. of the patients. Twelve patients died. DAVENPORT states that more immature cataracts are now removed than was customary formerly. Now that the importance of rigid asepsis and of irrigation is more realized this is without doubt a step in the right direction. Compared with Indian practice less trouble from unripe cortex is likely to be experienced in England since in this country the cortical element in the cataractous lens is commonly smaller owing to the older age of the average patient. The routine measures taken in Tirupattur Hospital against infection in cataract extraction are described by GNANADIKAM[30]. Four days before the operation the conjunctiva is swabbed over with 2 per cent. nitrate of silver solution. Subsequent applications of yellow oxide of mercury ointment and of zinc and ichthyol ointment are made. The other steps in technique are similar to those ordinarily employed at most hospitals. The eye is controlled during operation by a suture passed through the superior rectus muscle. Irrigation of the anterior chamber is deprecated. Intra-gluteal injections of 8–10 cc. of cow's milk are employed to treat any post-operative iritis.

DUGGAN[31] has adopted the Green's method of inducing anaesthesia by blocking the ciliary nerves. He uses a 5 cc. syringe with a needle 4 to 4½ cm. long. About 1 cc. of a 2 per cent. solution of novocain, to which is added a few drops of adrenalin chloride, is injected in cataract cases, whilst up to 4 cc. is used when any severe inflammation is present. The needle is entered through the skin at a point near the external canthus and between the margin of the orbit and the edge of the lower lid. It is pushed along the floor of the orbit with an inclination slightly upwards and inwards so as to follow a path between the external and inferior recti muscles. Some fluid is injected, and the direction of the needle is then altered so as to make further injections above and below on the outer side of the optic nerve. The lids are anaesthetized by further injections made subcutaneously above and below the external canthus. At least half an hour should be allowed to pass before commencing the operation. The anaesthesia is stated to last for quite two hours.

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30 GNANADIKAM (G. Joseph). The Prevention of Infection in Cataract Operations.—*Indian Med. Gaz.* 1927. Nov. Vol. 62. No. 11. pp. 634–636. With 2 text figs. [Swedish Mission Hosp., Tirupatur, Ramnad District, S. India.]

31 DUGGAN (J. N.). Deep Infiltration Anaesthesia in Ophthalmic Operations. —*Indian Med. Gaz.* 1927. Oct. Vol. 62. No. 10. pp. 558–561.

General Diseases.

Leprosy. VAN DRIEL[32] from his observation of 550 lepers in Sumatra concludes that (1) blepharochalasis of the upper lid is a common symptom; (2) keratitis punctata superficialis occurs more frequently than in non-lepers; (3) a mild iritis and irido-cyclitis is the most common ocular affection in leprosy; (4) invasion of the tissues by the bacilli takes place along the course of the blood vessels from the deeper structures; (5) extension of the disease from the skin to the eye is rare; (6) total blindness resulting from leprotic infection is comparatively uncommon.

Malaria.—HOLLMANN[33] has observed in every case of acute or chronic malaria, quartan or otherwise, which he has examined, retinal changes which he believes are peculiar to malaria. The retinal veins are engorged and dark, and exhibit an irregular reflex made up of angular, strongly refracting, crystalloid particles. This reflex is best marked at points where the vessels branch or cross one another, and is affected by movements of the patient's or the observer's eyes. The arteries are also involved, but in a lesser degree than the veins. The shining particles reminded the author of those seen in synchysis scintillans, but differed in that they were fixed in position. The appearance closely resembles the reflexes so often to be observed in youthful eyes, but these are found adjoining the vessels at the level of the retina, whereas the malarial reflexes are on the vessel wall and may project for some distance into the vitreous. In two boys, aged 11 and 13, the retinal picture was that of a mosaic formed of tiny black, white, and red specks, said to resemble nothing hitherto described in diseases of the retina. One of the boys was partially nightblind. Ten cases showed a peculiar slate-grey coloration in the neighbourhood of the disc. The patches were one and a half to twice disc size and possessed no well-defined border. Confirmation of HOLLMANN's statements would well demonstrate how easily experienced observers may overlook obvious lesions hitherto undescribed; but it must be remembered that retinal appearances very similar to these may result from causes other than malaria.

Miscellaneous.—Echinococcus of the Orbit.—HOWARD[34] reports a case of hydatid of the orbit which he treated in the Pekin Union Medical College Hospital. He suggests that hydatid disease may occur in China more commonly than is generally supposed since conditions there are favourable to its spread. Nevertheless only twelve cases were treated in the Pekin Union Hospital during the ten years 1916–1926. The liver was the part affected in all except the case reported. The eosinophilia was no greater than 3 per cent.

Thelaziasis of the Eyelid.—HOWARD[35] has described the case of a Canadian missionary in Pekin who infected a papilloma on the skin

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32 VAN DRIEL (B. M.). Affections of the Eye in Leprosy. [Correspondence.] —*Amer. Jl. Ophthalm.* 1926. Oct. Vol. 9. No. 10. pp. 785–786.

33 HOLLMANN (G. F.). Ueber Veränderungen an den Netzhautgefässen bei Malaria.—*Arch. f. Schiffs- u. Trop.-Hyg.* 1928. Feb. Vol. 32. No. 2. pp. 82–87. [1 ref.] [German Hosp., Tiflis.]

34 HOWARD (Harvey J.). Echinococcus Cyst of the Orbit in a Chinese.— *Amer. Jl. Ophthalm.* 1927. Oct. Vol. 10. No. 10. pp. 727–736. With 5 text figs. [5 refs.]

35 HOWARD (Harvey J.). Thelaziasis of the Eye and its Adnexa in Man.— *Amer. Jl. Ophthalm.* 1927. Nov. Vol. 10. No. 11. pp. 807–809. [10 refs.]

of his lower eyelid. The infection came apparently from a pet dog which had died from some helminthic infection of its lungs. It had suffered during its illness from a severe irritation of both eyes. Pathological examination of the papilloma showed larval nematodes present in the invaginations of the growth. These were identified as *Thelazia callipaeda.*

Aspergillosis of the Orbit.—WRIGHT[36] has reported two cases of fungating granuloma of the orbit from which he was able to isolate an aspergillus. The first, a male Hindu aged 35, showed a large ulcerating growth of his orbit. The tumour had displaced the eyeball upwards and outwards and had invaded the nasal cavity. The second, a female, presented two small, hard, subcutaneous nodules, the size of large peas, one above and the other below the internal tarsal ligament. Chronic dacryocystitis with complete obstruction was present, and granulomatous changes with marked scarring were found in the upper and posterior portions of the nasal cavity. Sections of the growth in each case showed a vascular granulation tissue studded irregularly with giant cells. Endothelial cells formed the bulk of the framework and polymorphonuclear leucocytes were numerous. The appearance of the tissue suggested a chronic irritation with giant cell formation similar to that occurring in the neighbourhood of a foreign body. Giant cells containing mycelial filaments were observed in sections stained with Leishman's stain, and pure cultures of the fungus were grown from the granuloma. Subcultures were made and described by CORNWALL. He found the aspergillus pathogenic to rabbits, but non-pathogenic to pigeons ; and he considered that, whilst it somewhat resembles *Aspergillus flavus*, it is likely to belong to a species hitherto undescribed. The larger tumour was benefited by exposure to X-rays, but the patient left hospital before his treatment was completed. The first case is particularly interesting as the photograph of the patient shows how very closely the granuloma resembled a malignant tumour.

Non-Specific Protein Therapy.—SCARLETT[37] writing from a considerable clinical and experimental experience of the use of injections of foreign protein in diseases of the eye, concludes that the treatment is valuable in cases of ocular infection, but it should never be used to the exclusion of the regular routine methods. He found intramuscular injections of 3 cc. of horse serum the most satisfactory form of protein treatment. Any primary cause of the ocular inflammation, such as focal infection, must be eradicated in order to obtain permanent relief. HOWARD[38] has found the intravenous injection of typhoid-paratyphoid vaccine efficacious in various diseases of the eye. Iritis, uveitis, exudative choroiditis, and retrobulbar neuritis seem to be the diseases most favourably influenced ; but he appears to consider the treatment to be beneficial in almost all diseases. He commences

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36 WRIGHT (R. E.). Two Cases of Granuloma invading the Orbit due to an Aspergillus.—*Brit. Jl. Ophthalm.* 1927. Nov. Vol. 11. No. 11. pp. 545–559. With 13 text figs.

37 SCARLETT (Hunter W.). Clinical and Experimental Observation on Foreign Protein especially in Iritis.—*Amer. Jl. Ophthalm.* 1927. Oct. Vol. 10. No. 10. pp. 747–750. [7 refs.]

38 HOWARD (Harvey J.). Non-Specific Protein Therapy in Eye Inflammations, with Special Reference to the Use of Typhoid Vaccine.—*China Med. Jl.* 1927. May. Vol. 41. No. 5. pp. 395–407. [17 refs.] [Peking Union Med. College, Peking.]

with 25 million bacilli injected intravenously and doubles each succeeding dose. Modifications are made, however, to suit the individual patient. An interval of 24 hours is left after the temperature has fallen to normal before another injection is administered. The constitutional reaction is usually severe, and no benefit need be expected unless a good reaction is provoked. The temperature may not reach normal until 48 hours, or even longer, after the injection. He prefers milk injections in the treatment of gonorrhoeal ophthalmia. 10 cc. of cow's milk, which has been boiled for 5 minutes, is injected as the first dose. The second and subsequent doses are 15 cc. The injections are made into the gluteal muscles and may prove very painful. Anaphylaxis is guarded against by injecting a drop or two of milk intradermally about half an hour before giving the dose.

Refraction.—In a survey of the refractive errors amongst Filipinos, Fernando[39] reports that nearly half of all eye cases, seen in private practice, are ametropic. Occupation and ametropia show a fairly close relationship. Thus 4 per cent. of manual labourers, 12 per cent. of young students, and 16 per cent. of older students were found ametropic. Mixed astigmatism, and simple or hypermetropic astigmatism usually caused the most distress. The most marked symptoms were often associated with the slighter errors of refraction, especially in patients exposed to tropical glare or who were subject to malnutrition. High myopia is comparatively rare in the Phillipines.

Reports.—The Twelfth and the Thirteenth Annual Reports of the Ophthalmic Section of the Egyptian Government for the years 1924 and 1925 deal with the statistics of eye disease obtained from the impressive total of 429,458 out-patients and 13,841 in-patients treated at the Egyptian ophthalmic institutions. Trachoma and its complications account, as might be expected, for the vast majority of the admissions. One notices a very high incidence of conical cornea (1,761 cases). 6,372 admissions were for primary glaucoma; 7,001 for senile cataract ; 552 for soft cataract ; and 21 for lamellar cataract.

The fact that only 1,568 spectacles appear to have been ordered throws an interesting side light upon social conditions in Egypt. The very close connexion existing between hot weather and the prevalence of eye diseases in the country is strikingly illustrated by a graph. The gonococcus is said to have been the most common cause of acute ophthalmia. By the addition of a 2 per cent. solution of potassium sulphate to cocaine it has been found possible to obtain satisfactory surface anaesthesia by instillations of 1 per cent. cocaine, and infiltration anaesthesia by injections of ½ per cent. cocaine. This has resulted in a reduction of cocaine consumption by three-quarters and an annual saving of £E.500. The formula of the 1 per cent. cocaine solution is :—

Cocaine hydrochlor....	0·05 gm.
Adren. chlor. 1-1000	0·24 cc. (4 drops)
Pot. sulph. 2 per cent. sol.... ...	1·25 cc.
Carbolic acid 0·5 per cent. ...	3·50 cc.
	5·04

[39] Fernando (Antonio S.). Errors of Refraction among Filipinos : a Preliminary Report.—*Jl. Philippine Islands Med. Assoc.* 1927. Sept. Vol. 7. No. 9. pp. 337–341. [5 refs.] [Coll. of Med. Univ. of the Philippines.]

The formula given of the ½ per cent. solution is :—

Cocaine hydrochlor....	0·05 gm.
Adren. hydrochlor. 1-1000 ...	1·0 cc. (16 drops)
Pot. sulph. sol. 2 per cent. ...	2·5 cc.
Carbolic acid solution 0·5 per cent	6·5 cc.
	10·05

A cocaine tablet of 0·05 gm. is first dissolved in the measured quantity of carbolic acid solution ; to this is added the potassium sulphate solution, and, when *quite cool* the adrenalin solution.

H. Kirkpatrick.

MISCELLANEOUS.

Sanford (Arthur H.). **A Photographic Method of Counting Blood Cells.**—*Jl. Lab. & Clin. Med.* 1927. Feb. Vol. 12. No. 5. pp. 456–460. With 5 text figs. [5 refs.]

The apparatus consists of a projection microscope and ordinary camera. With camera extension of 15 in., total distance from stage to the back of the camera of 24 in., a × 6 eyepiece and 8 mm. objective, a good field was obtained of more than 100 small squares of the counting chamber, at a magnification of about 200. Negatives were made on process films and an exposure of two seconds was found to be the optimum. It is desirable to perforate every blood corpuscle in the process of counting it, and for this purpose a pointed stylus, connected with an electromagnetic counting device, was used. Thus there is obtained a permanent record of the blood count, while the counting itself is done mechanically. The counts obtained in this way show rather larger numbers than by the ordinary method, which is probably due to the fact that out-of-focus cells are apt to be left out.

W. F. Harvey.

Coenaes (J.). Over Giemsa-kleuring van bloedpraeparaten. [**Giemsa Staining of Blood Preparations.**]—*Nederl. Tijdschr. v. Geneesk.* 1927. Nov. 5. 71st Year. 2nd Half. No. 19. pp. 1934–1938.

Giemsa staining requires careful attention to details. It necessitates scrupulous cleanliness in the preservation of the stock solution and in everything which is used in the course of staining. Temperature is another of the factors which contributes to success or failure. If the stock solution is kept for a long time in the cold, precipitation occurs. It should be kept at room temperature. The components of the Giemsa stain require that the methyl alcohol content should remain constant and precautions must be taken accordingly to keep the bottle well stoppered and to open it only for the shortest time possible. Methyl alcohol is not only volatile but hygroscopic. But most important of all is neutrality of reaction, if correct staining is to be obtained and decolorization avoided. This applies also to the distilled water used for washing away the stain. In washing away the stain the slide should not be removed from the glass rods on which it has rested while staining. It should be kept in position and in this way there will be no danger of deposit settling upon the film and becoming firmly attached to it. To ensure maintenance of the optimum neutral reaction throughout all the operations the diluent for the stain and the water for washing away the stain should be made up with well-buffered phosphate solutions of pH between 6·8 and 7·1. With such precautions a good result may be ensured.

W. F. Harvey.

Barlovatz. Les petits grossissements en microscopie pratique. [**Low Magnifications in Microscope Practice.**]—*Bull. Soc. Path. Exot.* 1927. Oct. 12. Vol. 20. No. 8. pp. 753–758. [Agric. Colonization Soc., Mayumba, Fr. Eq. Afr.]

Emphasis is laid upon the time saved in examination by the use of low magnifications. For stools, the ova of helminths such as of

Ankylostoma, Ascaris, Bilharzia, etc., require only 50 diameters; filariae in fresh blood 80; intestinal protozoa with their special refractility, motile flagellates with their movement, amoebic cysts as brilliant spheres and large bacilli about 125; malarial parasites in thick drop preparations, if well stained, 225; trypanosomes in lymphatic gland fluid 225 or 450. Trypanosomes disappear rapidly and if not seen within 20 to 25 minutes would be better examined for by repeating the gland puncture. Lymphocytes may be distinguished and counted in a fresh preparation of cerebrospinal fluid at a magnification of 125 to 130.

W. F. Harvey.

Bates (Lewis B.) & Avery (Samuel D.). **Hemorrhagic Bronchopneumonia resembling Pneumonic Plague due to a Bacillus of the *B. mucosus capsulatus* Group.**—*Proc. Med. Assoc. Isthmian Canal Zone.* 1921–1926. Vol. 14. pp. 95–98.

The case was one of a coloured male, who had been on the Isthmus for 15 years. He suffered from diarrhoea and weakness of 3 to 4 days duration and died 20 hours after admission to hospital. Only the lungs presented outstanding features at autopsy, in the shape of scattered haemorrhagic areas. Direct smears showed gram-negative cocci and diplococci or diplobacilli. The organism isolated fermented glucose, lactose, mannite and saccharose with gas formation and was identified as *B. mucosus capsulatus*. Two mice inoculated intraperitoneally and a guineapig subcutaneously died and the organism was isolated from the heart blood.

W. F. Harvey.

Kingsbury (A. Neave). **Dried Complement in the Tropics.** [Correspondence.]—*Brit. Med. Jl.* 1927. Sept. 17. p. 518.

It would render possible the performance of the Wassermann test in many small laboratories and in laboratories where guineapigs are not easily procurable, if the complement could, like the amboceptor, be obtained in dried form. The writer has tried such a preparation, but found that the solution given was turbid and required filtering. The strength of the solution was not up to the requirements of the test. Thus the necessary amount (2·5 M.H.D.) was contained in 0·5 cc. of a 1–10 dilution of the reconstituted serum, which is too low a dilution to be safely used. [The sample may have undergone change and ought ordinarily to have dissolved to give a clear solution. Some method of preparing ones own complementing serum, as possibly by freezing with carbon dioxide snow, pulverizing and drying absolutely and rapidly at low temperature, might furnish a satisfactory preparation.]

W. F. Harvey.

Przesmycki (F.). Badanie nad biochemja antygenów. Analyse des éléments antigènes des bacilles typhiques, paratyphiques et dysentériques. [**Antigens of Typhoid, Paratyphoid and Dysentery Bacilli.**]—*Medycyna Doświadczalna i Społeczna.* Warsaw. 1927. Vol. 7. No. 3–4. pp. 260–272. French Summary pp. 273–274. [1 ref.]

It has been possible to show for the lipoids of these organisms, as was shown for the bacilli $X_{19}H$ and $X_{19}O$, that they are not differentiated from one another. Immunization with bacterial lipoids may

even give rise in some cases to antibodies for animal lipoids, but this depends on the animal used for the purpose. If rabbits have been immunized by the lipoids without addition of serum, deviation of complement is given only in dilution 1–20 to 1–80, and with the addition of serum in dilution 1–320, which shows that the antibodies have rather the character of haptenes. Such immunization with lipoids does not give rise to antibodies for the whole bacilli. Polysaccharides, giving precipitation with antityphoid serum in a dilution of 1–5,000, have been extracted from typhoid bacilli, but not from paratyphoid A and B.

W. F. Harvey.

Braun (H.) & Goldschmidt (R.). Die Brutschrankluft als Stickstoff- bzw. Kohlenstoffquelle für Typhus-, Paratyphus B-, Shiga-Kruse- und Coli-Bazillen. [**Air of the Incubator as a Source of Nitrogen or Carbon.**]—*Cent. f. Bakt.* I. Abt. Orig. 1927. Jan. 3. Vol. 101. No. 4-5. pp. 283–290. [11 refs.]

In experiments on the exact metabolic requirements of organisms it is essential to exclude the possibility that the air of the incubator might prove a source of nitrogen or of carbon. That some organisms can make use of this source has already been shown.

In this research the following media were used : (1) nitrogen free,—sod: sulphate 0·5 : mag. sulphate 0·005 : dihydrogen pot. phosphate 0·05 : dipot. phosphate 0·15 : sod. lactate 0·5 : twice distilled water 100, and (2) carbon free,—ammon. chloride 0·5 : sod. sulphate 0·5 : mag. sulphate 0·005 : dihydrogen pot. phosphate 0·05 : dipot. phosphate 0·15 : twice distilled water 100.

Organisms of the typhoid-paratyphoid-coli-dysentery group can gradually utilize the incubator air as a source of nitrogen, and in the case of *B. coli* it can also serve as the source of carbon. If this source of error is to be eliminated culture flasks must be sealed after sowing and before being incubated.

W. F. Harvey.

Riding (D.). **Pyelitis from Infection with Morgan's No. 1 Bacillus.**—*Brit. Med. Jl.* 1927. Jan. 29. pp. 183–184.

The infection is described as occurring in two cases at Khartum. In the first Morgan's No. 1 bacillus was obtained from the urine in pure culture and the patient's serum agglutinated his own organism up to a dilution of 1 in 500 in an hour. The second case was not quite so definite, for a few *B. coli* colonies were also present.

W. F. Harvey.

Sanarelli (G.). Origine commune des spirochètes et des bacilles fusiformes. [**Common Origin of Spirochaetes and Fusiform Bacilli.**]—*C.R. Soc. Biol.* 1927. May 6. Vol. 96. No. 14. pp. 1136–1139.

The author has kept an intestinal spirochaete for more than a year in pure culture on agar, containing fragments of kidney tissue. If

it is transferred to nutrient bouillon, there is no growth, but let it be transferred along with *B. mesentericus* and both organisms develop freely. This favouring action of *B. mesentericus* is shown to be due to a thermolabile substance and is exhibited even by a bacterial-free filtrate. In such a *mesentericus* filtrate, however, the spirochaetes in time take on the appearance of typical fusiform bacilli. In one case this fusiform strain became fixed culturally. It tended to return, however, to the original spirochaetal form with passage through the guineapig. Agglutinating sera prepared with spirochaetal cultures agglutinated the fusiform strain to full titre, thus showing that antigenically the two strains were identical. Both cultures showed transformation almost completely into coccoid bodies by the 4th day. The fusiform bacilli, which developed on subculture from these coccoid bodies, were very short and very motile; they became transformed into filaments, ribbon-like and slow of movement. Some of these showed a certain amount of twist upon their axis, giving the filament a helicoidal appearance. The twists became, with increasing length of the organism, more pronounced and even more numerous. Later still transverse division occurred at the places of torsion, accompanied by tapering elongation as the organisms separated from one another. And thus were produced characteristic fusiform bacilli. The conclusion is drawn that fusiform bacilli are only spirochaetes which, under the action of the metabolic products of associated bacteria, prolonged contact with atmospheric oxygen and such influences, have lost more or less completely the power of effecting complete and multiple torsion on their own axis. This may explain why fusiform bacilli are found along with other bacteria and more superficially than the deeply placed anaerobic spirochaetes.

W. F. Harvey.

Liston (W. Glen). **Introductory Remarks on a Discussion on Vaccine Therapy.**—*Edinburgh Med. Jl.* 1927. June. Vol. 34. No. 6. Trans. Med.-Chirurg. Soc. pp. 101–108.

In the case of vaccine therapy as distinguished from vaccino-prophylaxis most of the evidence for satisfactory result has to be obtained from the users of the vaccines. Comparatively little experimentation in animals has been done on post-infectional immunization. Col. Liston strongly emphasized the need for co-operation between the practitioner and the bacteriologist, as also did most of those who took part in the subsequent discussion. A very moderately worded presentation of the subject of vaccine therapy is here given and cautionary advice offered upon its fundamental principles:—

(1) A vaccine must be made from the particular species of microbe causing the disease and in such a way as to produce maximum antigenic or immunizing effect; (2) the dose of vaccine used for the treatment of disease is a question of very vital importance and it should be in inverse proportion to the severity of the infection. It is a good practice to begin with a small dose and increase more or less rapidly, as may be indicated by the response to the inoculation, till a suitable dose has been attained; (3) every effort must be made to get the immune substances circulating in the blood into intimate contact with the infecting germs, as by opening up undrained cavities, etc.; (4) vaccines

are limited in their field of application and can be most successfully applied to (*a*) the prevention of disease, (*b*) the treatment of localized infections, and (*c*) treatment of the earlier stages of acute infections.

W. F. Harvey.

Besredka (A.). De la vaccination par voie buccale contre la dysenterie, la fièvre typhoide et le choléra. [**Oral Vaccination against Dysentery, Typhoid and Cholera.**]—*Rev. d' Hyg. et de Méd. Préventive.* 1927. June. Vol. 49. No. 6. pp. 445–463.

The author begins with an enunciation of his well-known views on local immunity. Vaccines against dysentery, typhoid and cholera administered subcutaneously are efficacious not because they give rise to antibodies, but because, when they have arrived at their selective destination, the intestine, they are absorbed by receptive cells and give rose to a local immunization. This applies to both living and dead vaccines. If this is the mode of immunization, it would seem preferable to practise entero-vaccination more directly. According to Besredka's experiments in animals, oral immunization can give rise to immunity in 3 days, which is too short a time for the production of antibodies. Antibodies, however, may often be found in the blood after the first oral administration of dysentery vaccine and represent, no doubt, a response to the parenteral introduction of antigen through erosions produced by the action of the vaccine itself. These erosions heal up quickly, and the intestine, which has become immunized, is then no longer subject to erosion. Thus there comes about the phenomenon that subsequent administration of vaccines *per os* gives rise to a more and more solid immunity, but at the same time the antibodies of the blood diminish or disappear. That is to say, we are dealing in reality with a local and not general immunity. A striking trial of the method of oral immunization is reported by Nicolle and Conseil. Two volunteers were given killed Shiga vaccine by the mouth for 3 consecutive days. On the 15th and 18th day after, they swallowed ten thousand million living virulent Shiga bacilli; the same dose was given to two other unvaccinated persons. Both the unvaccinated contracted Shiga dysentery, whilst the vaccinated did not suffer at all. Some statistics are given of the use of dysentery vaccine by the mouth, both prophylactic and curative.

In the case of typhoid and cholera large quantities of these organisms may be ingested without the slightest effect upon the animal. And yet the intestine is the seat of election for the action of these organisms. If the thick coat of mucus, which protects the intestine, be removed by the administration of bile the truly sensitive cells are exposed and a comparatively small dose of typhoid or cholera bacilli by the mouth will then produce infection and death. This affinity for and localization of the organisms to the intestine does not apply merely to ingested bacilli but also to bacilli injected subcutaneously, intraperitoneally or intravenously. In each case the virus arrives at the intestinal mucosa. If then the infection is essentially intestinal, to the exclusion of other organs, it is the intestine in particular which requires protection. And again, the use of bile, as a means of laying bare the sensitive cells requiring immunization, is indicated. This method of vaccination has been already carried out extensively both for typhoid and cholera.

Besredka concludes: Laboratory experiments and trials in man show that vaccination *per os* is effective prophylactically, and curatively, in the treatment of dysentery, typhoid and cholera.

W. F. Harvey.

Schlirf (Carl). Schwierigkeiten und Irrtümer bei der bakteriologischen Typhus-, Paratyphus- und Ruhrdiagnose. [**Difficulties and Errors in the Bacteriological Diagnosis of Typhoid, Paratyphoid and Dysentery.**]—*Muench. Med. Woch.* 1927. June 10. Vol. 74. No. 23. pp. 970–972. [1 ref.]

The author describes the well-known technique for the identification of organisms of the typho-coli-dysentery group. He emphasizes the difficulty of isolation of the pathogenic forms from faecally contaminated water and insists on the necessity for submission of satisfactory faecal samples for test—portions, for example, which contain blood and flakes of mucus. The usual motility tests, fermentation reactions with coloured solid or liquid media, serum reactions with high titre sera and with the patient's own serum, are described. Some of the laboratory difficulties relating to late lactose fermenters, so-called *para-coli* strains and the so-called paraagglutination phenomenon are referred to. In the case of dysentery organisms the necessity for omission of crystal violet from the common selective medium for typhoid-paratyphoid organisms is commented on, as is also the variation occurring in the mannite-fermenting pseudodysentery group.

W. F. Harvey.

Lomry & Gillet. Sur l'identification des bacilles pathogènes de l'intestin. [**Identification of the Pathogenic Intestinal Bacilli.**]—*Ann. Inst. Pasteur.* 1927. June. Vol. 41. No. 6. pp. 648–667. [53 refs.]

The authors deal with the still undecided question of the differentiation of organisms of the typho-coli-dysentery group without, however, entering upon the further question of the dissociation of organisms of one species into agglutinable, inagglutinable and spontaneously agglutinable races. They consider the matter from the point of view of differentiation of species by means of sugar reactions and agglutination. One hundred and thirty strains were investigated, of which 13 showed themselves abnormal in regard to the reactions employed.

As regards the fermentation of sugars, it may be necessary to make daily subcultures for a considerable time in a selective medium before deciding on the rejection of an organism from a given species. It is also necessary to make certain of the derivation of the organism from a pure colony. With these precautions and with identical conditions throughout, it is largely possible to decide whether a test bacillus is a specific entity or not. The sugars used were glucose, saccharose, mannite, sorbite, xylose and lactose, with the addition of nutrient gelatin (for liquefaction) and neutral red agar (for gas). The *Medical Research Council Report* No. 51, 1920, is here referred to. After this the agglutination test supplied confirmatory proof. In particular

the ordinary absorption test was found most useful, depending, as it does, on the principle that an immune serum saturated with heterologous bacilli is only deprived of its coagglutinins, whereas if it is saturated with homologous bacilli it loses both agglutinins and co-agglutinins. For saturation purposes it was necessary to exclude autoagglutinable and inagglutinable organisms and to have sera of standard strength. With this test and the preceding sugar test, the typhoid-paratyphoid group has been separated into typhoid, paratyphoid A, and paratyphoids B1, B2, B3. The B1 is the normal paratyphoid of Schottmüller. Among the organisms designated B2 are, with others, the Aertrycke bacillus and paratyphoid C bacillus, while in the B3 group are found the Gaertner bacillus, *B. suipestifer* and the bacillus of mouse typhoid.

After these tests were carried out there still remained a few aberrant organisms which did not allow of definite classification. If after daily subculture for a long period, such organisms prove to be neither agglutinable nor agglutinogenic, nor autoagglutinable, they may safely be regarded as not belonging to any of the known species.

W. F. Harvey.

ARINKIN (M.). Degenerative Veränderungen der Kernigkeit der Granulocyten, welche parasitenähnliche Bildungen simulieren. [**Parasite-like Degeneration of the Granules of Leucocytes.**]—*Rev. Microbiol. et Epidémiol.* 1927. Vol. 6. No. 1. German summary p. 135. [In Russian pp. 99–100.]

Ring, signet ring and pear shaped forms, met with in blood films may, according to the author, be derived from degenerations of the granules of leucocytes and may simulate various parasites such as kala azar, etc.

W. F. Harvey.

BAILEY (Basil N. V.). **Some Preliminary Notes on Bright's Disease in British Guiana.**—*Davson Centenary Fund British Guiana. Theses submitted for the Award of the Gold and Silver Medals for the Triennial Period 1923–1926.* 34 pp. [n.d.] Printed by Waterlow & Sons, Ltd., London.

This thesis gives the incomplete results of an enquiry into the causes of Bright's disease in British Guiana. The author informs us that this malady is responsible for more deaths in the Colony than any other single disease, and that over thirty years ago DAVIDSON regarded the discovery of a healthy kidney at an autopsy as a notable event. Scarlet fever cannot be held responsible for the prevalence of nephritis amongst children, for this acute fever is very rare, though it exists and the author records one case with typical manifestations of the disease, complicated by otitis media, and later, by nephritis. Phthisis and syphilis are usually incriminated locally as main factors in the causation of nephritis, but it is pointed out that the deaths from nephritis, far from falling, have actually increased in spite of vastly improved methods of treatment, and a larger number of cures, of these supposedly causal diseases.

The author believes that acute nephritis is of streptococcal origin, and that staphylococci with their continued irritation of a moderate

virulence give rise to large white kidney, while prolonged toxaemia of a low virulence terminates in the production of contracted kidney. Of these varieties, his studies were restricted to chronic parenchymatous nephritis, but, as he himself admits, the bacteriological findings are invalidated in large measure by the difficulties of obtaining uncontaminated material for examination. He argues that the source of the bacterial infections leading to an ultimate nephritis, is grossly contaminated drinking water, and in support of his contention points out that in Georgetown, unlike the rest of the Colony, the deaths from nephritis have fallen by nearly 50 per cent. in the past few years. The inhabitants of Georgetown, he says, have learnt and are learning to boil their drinking water, or have other means of purification provided, and so make use of supplies which are " at least cleaner than trench water." To this improvement is attributed the localized fall in mortality from kidney disease.

The investigations originally planned were interrupted by illness, and some essential parts of the theories put forward have not been submitted to proof, so that in the thesis, as it stands, evidence and supposition have something of the relative proportions of the bread and sack in Falstaff's tavern bill. None the less, the author deserves well of the Colony for having initiated an enquiry, seemingly long overdue, which must in the end benefit the health of the community.

W. P. MacArthur.

Pantschenkow (M. M.) & Kirstner (A. A.). Die quantitative Bestimmung des Chinins im Blute. [**The Quantitative Estimation of Quinine in Blood.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1928. Mar. Vol. 32. No. 3. pp. 137–140. With 1 coloured text fig. [15 refs.] [I. Med. Clinic, I. State Univ., Moscow.]

The methods hitherto adopted for the estimation of quinine in blood, depending on the extraction of the quinine and its estimation by means of precipitants, are regarded by the authors as liable to error owing to the difficulty of removing the alkaloid from associated protein and the low concentration of quinine in blood. Their method consists in mixing 10 cc. of blood drawn from the median basilic vein at a desired time (3, 6 or 9 hours after administration of the drug) with sufficient dry sodium bicarbonate contained in an Erlenmeyer flask, and drying the mixture on the water-bath, with frequent stirring until the particles are no longer sticky. The mass is then transferred to a porcelain dish and any lumps rubbed down to a powder, which is again transferred to the flask. It is then extracted with ether three times using 100 cc. each time and allowing each lot of ether to remain on the mixture with occasional shaking for 24 hours. This part of the process may be expedited by extracting with ether for 24 hours in a Soxhlet extractor. The filtered ethereal extract is then evaporated to dryness, with the usual precautions to avoid fire or explosion and the residue dissolved in 1 to 2 cc. of dilute sulphuric acid. This solution is transferred to a test tube, made of non-fluorescent glass, and examined in ultra violet light, alongside a standard solution of quinine bisulphate, preferably in a dark room. The lamp should be run for 5 minutes before making a comparison. With the lamp used by the authors, 1 in 2,000,000 of quinine bisulphate showed a distinct bright

blue fluorescence. Quinidine can also be estimated by this process. The method shows that the erythrocytes contain more quinine than serum.

T. A. Henry.

Kroó (H.) & Mano (Y.). Ueber die Bedingungen optimaler chemotherapeutischer Wirkung. Abhängigkeit der Wirkung von der Konzentration der Heilmittel. [**Conditions for Optimal Chemotherapeutic Effect. Dependence of Efficacy upon Concentration of Drug.**]—*Deut. Med. Woch.* 1927. Apr. 8. Vol. 53. No. 15. pp. 603–605. [5 refs.] ["Robert Koch" Inst., Berlin.]

—— & Schulze (F. O.). Ueber die Bedingungen optimaler chemotherapeutischer Wirkung. Ergebnisse am Menschen. [**Conditions for Optimal Chemotherapeutic Effect. Results with Man.**]—*Ibid.* Oct. 14. No. 42. pp. 1759–1760. [1 ref.] ["Robert Koch" Inst., Berlin.]

Contrary to the commonly accepted view that for the sterilization of an infected animal a certain minimum dose of a drug specifically active against the infection is required, the authors find that the therapeutic value of a dose of any particular drug may depend in large measure on its concentration in the solution in which it is administered. Thus it was found that in mice infected experimentally with recurrent fever, the dose of neosalvarsan which cured all the mice was 3·3 mgm. in 1 cc. water, the same dose in 0·25 cc. and 0·1 cc. water giving only 85·6 and 57·1 per cent. of cures respectively. Similar results were obtained with salvarsan and a complex gold compound "Solganal." Similarly mice experimentally infected with nagana responded better to doses of 0·02 to 0·1 mgm. of neosalvarsan in 1 cc. of water than to the same doses in 0·1 cc. of water. With trypaflavin, the only dyestuff it was possible to try, no such dependence of the therapeutic effect on concentration of the solution could be detected. With two antimony compounds, tartar emetic and "antimosan," dilution either had no effect or lowered the therapeutic efficiency, which in the case of "antimosan" was much higher at 1 mgm. in 0·1 cc. than at 1 mgm. in 1 cc. of water.

The explanation suggested for these differences between arsenical and antimonial derivatives is that oxidation takes place more readily in dilute than in concentrated solutions. The immediate oxidation products are highly trypanocidal in the case of salvarsan, but not in the case of the two antimony compounds used.

In the second paper the results are given of the use of quinine hydrochloride (with ethylurethane) by intravenous injection in the treatment of paralytics infected with malaria. One series of 20 patients was given 0·2 gram of the drug in 0·9 cc. water, and another 20 the same amount in 200 cc. water. The first series experienced on the average 4·3 fever-free days against 11 in the second series and in one week 20 per cent. of the first group were fever-free against 80 per cent. in the second.

In a second investigation two pairs of groups of five patients each were treated with 0·3 gm. neosalvarsan dissolved in 1 or 300 cc. water for one pair and with 0·15 gm. neosalvarsan in 1 or 200 cc. for the second pair. Here, again, the results were in favour of the two dilute solutions and were worst for the group receiving 0·15 gm. in 1 cc., and best for that receiving 0·3 gm. in 300 cc.

T. A. Henry.

Levaditi (C.) & Longinesco (J.). Les rapports entre l'activité spirillicide et trypanocide des éléments et leur classification électrochimique. [**Relation between the Spirillicidal and Trypanocidal Activity of Elements and their Electrochemical Classification.**] —*C.R. Acad. Sci.* 1927. July 4. Vol. 185. No. 1. pp. 91–92. [1 ref.]

The authors point out that the elements gold, mercury, vanadium, arsenic, antimony, bismuth, tellurium and platinum, whose compounds have been shown to possess some therapeutic value in syphilis and trypanosomiasis, have in general a polarization tension below that of hydrogen, do not decompose water at atmospheric temperature and are precipitated as sulphides by sulphuretted hydrogen. It is suggested that the formation from these metals in the tissues of spirillicidal compounds such as " bismoxyl " and " trypanotoxyl " depends upon these properties, but the latter may also be exhibited by some elements, e.g., copper and palladium, which are inactive in these two diseases.

T. A. Henry.

Papamarku (P.). Serologische Erfahrungen in den Tropen (Java). [**Serological Experiences in Java.**]—*Ztschr. f. Hyg. u. Infektionskr.* 1927. July 25. Vol. 107. No. 3-4. pp. 755–780. [9 refs.]

In this paper, which cannot usefully be summarized, the author records fully his interesting and valuable work in Java, in the preparation and testing of antisera against tetanus toxin, snake venoms, diphtheria toxin and dysentery bacilli. The best anti-dysentery serum was obtained by injecting the horse first with killed and later with living bacilli.

H. M. Hanschell.

Landsteiner (K.) & van der Scheer (J.). **Experiments on the Production of Wassermann Reagins by Means of Trypanosomes.**—*Jl. Experim. Med.* 1927. Mar. 1. Vol. 45. No. 3. pp. 465–482. [21 refs.]

The discoverers of the Wassermann reaction held, from analogy, that the reaction was caused by antibodies specific for the infecting microbes—a view abandoned when it was shown that syphilitic sera react with alcoholic extracts of organs, presumably with lipoids present in these extracts. In this paper the author gives full details of a careful experimental enquiry into the Wassermann reaction following the injection into rabbits of killed *Trypanosoma equiperdum*. It is known that positive Wassermann reactions prevail in trypanosomiasis of rabbits, similar to those in syphilis. It was found that the trypanosomes were highly active antigens, sufficing in themselves to produce strongly positive Wassermann sera, in analogy to the findings reported by F. Klopstock with *Treponema pallidum*. It appears likely that this antigenic activity of the microbes or their products plays a part in the production of the Wassermann reagins in infections with spirochaetes and trypanosomes.

H. M. Hanschell.

Sison (A. B. M.) & Ignacio (M.). **Observations on Basal Metabolism among Filipinos.**—*Jl. Philippine Islands Med. Assoc.* 1927. Nov. Vol. 7. No. 11. pp. 416–419. [1 ref.]

The determinations are mainly concerned with cases of disease and the chief result is that the basal rate is increased in toxic goitre, and in two of the cases it lessened after surgical intervention. The thyroid is regarded as functionally concerned in regulating basal metabolism. Data are given for other diseases, but only for one case in each disease.

W. D. Halliburton.

Fleming (Wm. D.). **Blood Chemistry and Blood Pressure Standards. I. The Effect of Tropical Residence on the Blood Chemistry and the Blood Pressure.**—*Jl. Metabolic Res.* Morristown, N.J., U.S.A. 1924. Vol. 6. pp. 87–121. With 18 charts. [20 refs.] [Lab. U.S. Army Med. Dept. Res. Board, Bureau of Science, Manila, P.I.]

Data are presented for 500 American and 590 Filipino soldiers. Neither the chemistry nor the pressure is affected by length of stay in the tropics. The systolic blood pressure in Manila averaged 10 mm. lower than in temperate zones and 5 mm. lower for the Filipinos. This is due to decreased peripheral resistance. Moreover, pressure is greater with advanced age. More work is necessary on blood-chemistry.

W. D. Halliburton.

Jacob (J. E.) & McLavy (J. R.). **Studies in the Chemistry of the Blood. Some Normal Values of Blood Sugar in the Tropics.**—*Proc. Med. Assoc. Isthmian Canal Zone.* 1921–1926. Vol. 14. pp. 71–76.

The figures recorded are higher than those reported by others. Emotion was excluded. In one case 160 mgm. per 100 cc. blood is given, but it is dangerous to draw conclusions from one observation, and consideration of the glucose curve after ingestion of glucose showed that the case was not diabetic.

W. D. Halliburton.

Cox (Wesley C.) & Jacob (James E.). **Preliminary Report on Investigation of Sugar Content of Human Blood in the Tropics with Special Reference to the Canal Zone.**—*Proc. Med. Assoc. Isthmian Canal Zone.* 1921–1926. Vol. 14. pp. 77–83.

Observations were made on one person only for about 4 months. The authors could not find that a tropical climate has any effect on the percentage of sugar in the blood. More work is suggested on their subject.

W. D. Halliburton.

Newham (H. B.). **The Sedimentation-Rate of Erythrocytes in Certain Tropical Diseases.**—*Quarterly Jl. Med.* 1927. July. Vol. 20. No. 80. pp. 371–382. With 14 charts. [18 refs.]

The tropical diseases in which the sedimentation rate was studied were, sprue (3 cases), amoebic liver abscess (1), amoebic dysentery (6),

kala azar (4), subtertian malaria (2), tertian malaria (3), granuloma venereum (1), leprosy (1). All, with the exception of the case of granuloma venereum, 4 cases of amoebic dysentery and the case of leprosy showed a rate of sedimentation considerably in excess of the normal. Charts illustrate the rate. Details are given of technique and the subject is discussed in its many bearings. Dr. Newham's conclusions are as follows :—

" 1. The rate of sedimentation of red-blood corpuscles varies markedly in a great variety of disease conditions.

" 2. Little value can be placed on the sedimentation-test as an aid in differential diagnosis.

" 3. It would appear that in all cases showing increased rapidity of sedimentation there is some concomitant derangement of the liver.

" 4. Rapid sedimentation is not dependent in any way on the particular blood group to which the blood belongs.

" 5. Rapid sedimentation appears to occur in any disease condition associated with anaemia.

" 6. The cause of the phenomenon does not appear to reside in an increased proportion of fibrinogen in the blood.

" 7. The property of rapid sedimentation seems to reside in some property of the corpuscles rather than in any particular property of the plasma.

" 8. It is probable that the phenomenon of rapid sedimentation is due to a combination of both physical and chemical changes."

A. G. B.

FOSTER (John H.). **Blood Pressure of Foreigners in China.**—*Arch. Intern. Med.* 1927. July 15. Vol. 40. No. 1. pp. 38–45. With 1 chart. [12 refs.] [Hunan-Yale Hosp., Changsha, China.]

The author finds the blood-pressure of 278 Chinese at Changsha, Hunan, to be lower than the usual averages and, from a large hospital experience, that hypertension is rare. The blood pressure of 120 Occidentals living at Changsha was about the same as that of the Chinese, and lower in the majority than in America. The cause or causes are obscure. Changsha lies at 28° N. Lat. ; the mean temperature is that of Alabama and Mississippi.

A. G. B.

OGILVIE (A. G.). **Testing for Occult Blood in Faeces. A Study of Alleged Fallacies.**—*Brit. Med. Jl.* 1927. Apr. 23. pp. 755–756. [11 refs.]

The object of this paper is to bring the examination of stools for occult blood as much within the scope of a busy general practice as is the testing of urine for albumin and sugar. The author discusses some fallacies that have been alleged against delicate blood-tests in this sphere, and he describes the pyramidon and benzidin (Gregersen) tests and his use of them in his own experimental investigations. He gives the following summary of his results ; but since the whole paper is a summary of methods and results it must be read *in extenso*.

" Certain of the common articles of food, cooked in various ways, have been tested ; thirty pathological cases on various diets, and exhibiting all

the alleged fallacies among them, have been investigated, and a personal experiment has been carried out. The results have been discussed, and the following conclusions have been arrived at :—

" 1. The Gregersen reaction is more reliable than the pyramidon, but blue or blue-green colour must appear within thirty seconds to make the result conclusive.

" 2. " Basting " seems to have an effect in producing a reaction with foods, but frying has no such effect.

" 3. Bleeding due to hard tooth-brushes or teeth-sucking, and slight degrees of gum-bleeding and haemoptysis, may be disregarded, although severer degrees of bleeding may cause confusion.

" 4. Iron medicines produce no " occult blood " reaction in faeces, but the ingestion of red bone marrow is incompatible with a reliable test.

" 5. A blue or blue-green colour with Gregersen's test, appearing within thirty seconds, is proof positive of the presence of occult blood in the stools irrespective of the patient's diet.

" 6. Meat in the diet may occasionally cause a faint colour with Gregersen's test after thirty seconds.

" 7. Occult blood may occasionally be present in the stools of patients suffering from acute rheumatic fever and chorea.

" 8. A milk diet is liable to cause confusion by checking bleeding."

A. Alcock.

ELVEHJEM (C. A.) & WADDELL (J.). **A Standard Method of recording the Hemoglobin Content of Blood.**—*Jl. Lab. & Clin. Med.* 1927. June. Vol. 12. No. 9. pp. 889–891. [7 refs.]

The authors lament the inconvenience of expressing the haemoglobin content of blood in terms of a so-called " normal " standard that is not in universal use. They therefore suggest that all determinations be reported in grammes per 100 cc. of blood.

" The Von Fleischl-Miescher hemoglobinometer gives a reading of grams per 100 cc. directly and the Newcomer instrument gives a similar reading when a special conversion table is used ; but in many of the other instruments only the reading of the per cent. of normal is given. When using these instruments the percentage must be multiplied by the standard for the particular instrument in order to obtain grams per 100 cc.

" When all investigators report their figures in grams per 100 cc. of blood the results from all laboratories may be compared very easily without laboriously determining what instrument was used and upon what standard that instrument is calibrated. There is one precaution, however, that should be taken. All instruments should be standardized against Wong's iron method or Van Slyke's oxygen capacity method of determining hemoglobin. If all instruments are not properly calibrated figures will be of no more value than when the per cent. of normal was used."

A. Alcock.

MULLER (Henry R.). **Blood-Groups among the Yoruba Tribe of West African Negroes.**—*Proc. Soc. Experim. Biol. & Med.* 1927. Feb. Vol. 24. No. 5. pp. 437–438.

The following is the result, according to the Jansky classification, of an investigation of the blood-relations of the Yoruba tribe of West African negroes. Samples of blood from 325 individuals were examined, and reacted as follows : Group I, 52·3 per cent. ; Group II, 21·5 per cent. ; Group III, 23·0 per cent. ; Group IV, 3·2 per cent.

A. Alcock.

McCarrison (Robert). **The Experimental Production of Stone in the Bladder.**—*Brit. Med. Jl.* 1927. Apr. 16. pp. 717–718. With 2 text figs. [1 ref.]

The subject of this paper is of sufficient interest for us to note the conclusions. It is itself an abstract of a paper to appear in the *Indian Journal of Medical Research.*

" 1. Stone in the bladder has been produced in rats by means of an ill-balanced diet composed of foods commonly used by man. The stones were of the phosphatic variety.

" 2. The main faults of this diet were : (*a*) absence of protein of animal origin ; (*b*) deficiency of vitamin A ; and (*c*) excess of earthy phosphates. To these faults there may possibly have been added a toxic action of the diet itself on the urinary tract."

A. G. B.

McCarrison (R.). **The Experimental Production of Stone-in-the Bladder with a Note on Pernicious Anaemia and Epidemic Dropsy. (Preliminary Note.)**—*Indian Jl. Med. Res.* 1927. Apr. Vol. 14. No. 4. pp. 895–899. With 4 figs. on 3 plates. [2 refs.]

Colonel McCarrison at Coonoor, India, produced stone-in-the-bladder in rats by means of a diet in common use by man—tinned Scotch oatmeal, linseed meal, tinned cornflour, with sodium chloride and calcium phosphate. The faults were (*a*) absence of protein of animal origin, (*b*) relative deficiency of vitamin A, (*c*) excess of earthy phosphates, (*d*) possible toxic action on the urinary tract. Eighteen animals suffered from a severe anaemia, of which 12 died.

" An outbreak of a condition resembling ' epidemic dropsy ' also occurred from which 6 animals died, and 2 recovered ultimately to die from other causes. This condition was characterised by a splaying, uncertain gait, oedematous swelling of the feet and tail, punctate haemorrhage and severe anaemia. In some animals the toes and tail became gangrenous and dropped off.

" Unfortunately, these two conditions could not be studied in further detail owing to stress of other work. But it would seem that neither was solely the result of the faulty diet, but of some microbic or other pathogenic agent the action of which was favoured by the faulty food. The ' epidemic dropsy,' which had many features in common with this malady as seen in Bengal and Ganjam, would not appear to have been related to deficiency of vitamin-B in the diet ; the oatmeal and linseed meal providing this factor in abundance. But the deficiency of vitamin-A in the diet may have rendered the animals susceptible to systemic infection by way of the gastro-intestinal tract and subject to toxaemias of a haemolytic nature."

A. G. B.

Külz (L.). Die Bezwingungsmöglichkeiten des heissen Klimas. [**The Possibilities of overcoming Hot Climate.**]—*Abhandl. a. d. Gebiet d. Auslandskunde. Hamburg. Univ.* 1927. Vol. 26. (D., Med. & Vet. Vol. 2.) [Festschrift Nocht.] pp. 250–255.

The author discusses this question as one of natural selection, individual adaptation to climate, and transformation of climate to suit the biological needs of man. The last has been neglected and contains great possibilities.

A. G. B.

Brahmachari (Upendranath) & Sen (Parimal Bikas). **On a New Method of Fixing Thick Blood Films for the Finding of Leishman-Donovan Bodies and Malarial Parasites in the Peripheral Blood.**—*Indian Jl. Med.* 1928. Feb. Vol. 9. Pt. 1. pp. 1–3. With 1 text fig. [Dept. of Biochem., Univ. College of Science, Calcutta.]

Thick films, which must not be more than moderately thick, are spread by a metal spreader consisting of a metal plate the size of a slide and so ground at one end that when this is applied to the slide it makes contact only at the edges of the slide, a space being left between the slide and the central part of the ground end of the spreader. By varying the angle between the slide and the spreader the height above the slide of the central part and hence the thickness of the blood film varies. It is stated that if the film be too thick or dried too rapidly leucocytes do not attach themselves to the slide and consequently contract when dried. The film must, therefore, be of proper thickness and dried slowly. The dried film is fixed by immersion in acetone Merck extra pure for five to ten minutes. It is then dried and placed in distilled or tap water in which dehaemoglobinization is complete in about one minute. The film is then washed in methyl alcohol to remove traces of acetone, dried and stained in the usual manner with one of the Romanowsky stains. Films prepared by the method advocated by Shortt, Das and Lal (see above) may be treated in the same manner. The advantages of the method depend on the fact that the deforming process of dehaemoglobinization is carried out after fixation and not before as in the usual methods of dealing with thick films.

C. M. Wenyon.

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d'Anfreville de la Salle. Démographie de Casablanca. Rapport annuel d'ensemble pendant l'année 1926.—*Rev. Méd. et Hyg. Trop.* 1927. Nov.–Dec. Vol. 19. No. 6. pp. 166–178.

Bernard (R.). A propos d'un service de santé colonial. Programme de chef : le Colonel-médecin Damas Mora.—*Bruxelles-Méd.* 1927. Aug. 28. Vol. 7. No. 44. pp. mcclxviii–mcclxxii.

Bouffard. L'assistance médicale en Côte d'Ivoire pendant l'année 1925.—*Ann. de Méd. et de Pharm. Colon.* 1927. July–Aug.–Sept. Vol. 25. No. 3. pp. 309–348.

Brosius (O. T.). Case Reports of *B. typhosus*, *B. paratyphosus*, and *B. coli* Infections, complicated by Tropical Diseases.—*Fifteenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass.* 1926. pp. 141–146. With 1 text fig. [1 ref.]

Coro (A. J.). Contribucion al estudio del metabolismo basal en los paises tropicales.—*Arch. Soc. Estudios Clin. Habana.* 1927. June. Vol. 27. No. 1. pp. 7–20. [11 refs.]

Dixon (W. E.) & De (Premankur). The Action of Certain Quinine Derivatives with Special Reference to Local Anaesthesia and Pulmonary Oedema.—*Jl. Pharm. & Experim. Therap.* 1927. Oct. Vol. 31. No. 6. pp. 407–432. With 15 text figs. [12 refs.] [Pharmacol. Lab., Cambridge.]

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REVIEWS AND NOTICES.

NADKARNI (K. M.) [Edited & published by]. **The Indian Materia Medica.**—pp. xviii + 1142 + clxix + lxxxviii. 1927. Bombay: K. M. Nadkarni, P.O. Box 3558.

This is a stockily-built volume with four different lots of paging. The author in his somewhat politically tinged preface states that the book has been written to supply the "want of a handy manual treating of indigenous drugs on the lines of British Materia Medica," and he expresses the hope that "it may go side by side with a British Materia Medica as a companion volume among the Medical Students and members of the Indian Medical Profession." In expressing this hope, the author implicitly invites comparison with a British Materia Medica, but if, despite Dogberry's oft-misquoted aphorism that "comparisons are odorous," we make it, a western reader feels impelled to recall that hope oft fails of its promised largesse.

In a well-known and standard English text-book of Materia Medica, the number of drugs or drug-materials derived from plants from all parts of the world are fewer than 250, and their source, description, constituents, uses, and physiological effects are concisely given. In the book under review the plants alone number 1,053, catalogued in the alphabetical order of their scientific names. Obviously with such a multitude, individual description is out of the question and it is wisely not attempted. The scientific name is followed in most cases by a list of names in Sanskrit and the principal living Indian languages, often also in English, Persian, Arabic, Burmese, and in some cases even French, German, Japanese, Javanese and Portuguese. Such polygot lists may on occasion be useful, but in view of the casual way in which "vernacular" names are applied in any language anywhere, caution in relying on them is a virtue which the Indian medical man will have opportunity enough to exercise. After the list of names come the habitat or rather the geographical distribution in India, then commendably concise paragraphs stating the parts used, the constituents, the general physiological effects and preparations. Then comes an account of the uses, which is by no means necessarily the same as the usefulness, of the drugs. These accounts make up the greater and weakest part of the book. In too many instances they are merely an uncritical collection of unrelated statements, inferentially attributing to the drugs virtues of incredible variety and efficacy. Fifty-two drugs are catalogued under the Mineral Kingdom and fifty-one under the Animal Kingdom. There are eight appendices giving lists of drugs according to their therapeutical and physiological actions, their specific uses and other varied information of more or less value.

That India can obtain from indigenous plants or such as can be cultivated within her borders practically all the vegetable materia medica likely to be of therapeutic value is unquestionable. Notable instances are the introduced *Cinchona* in the treatment of malaria and the indigenous *Hydnocarpus* in the treatment of leprosy. Neither popular beliefs in the virtues of village or jungle remedies nor the recording of such beliefs are necessarily to be despised, but such beliefs must be scientifically tested and proved before being admitted into a rational system of therapeutics. For such work there is abundant scope in India. So while we cannot admit Mr. Nadkarni's work as a scientific guide to therapeutics, it may play a useful part in affording material to the Indian practitioner, who has the time and inclination, for testing from at least the clinical standpoint the value of the beliefs and practices, the recording of which makes up so large a part of the volume.

A. T. Gage.